SC-min / SC-1 / SC-4 Indicator Manual

Programming

SC-1 / SC-min LED

Extendable advanced weighing machine with high luminosity and high contrast LED display

SC-1 / SC-min LCD

Extendable advanced weighing machine with backlit LCD display

SC-4 / SC-4 LCD

Desktop version of SC-1 indicator

2010-01-12

COMPLETE PROGRAMMING MANUAL

ANALOGUE AND DIGITAL INDICATORS

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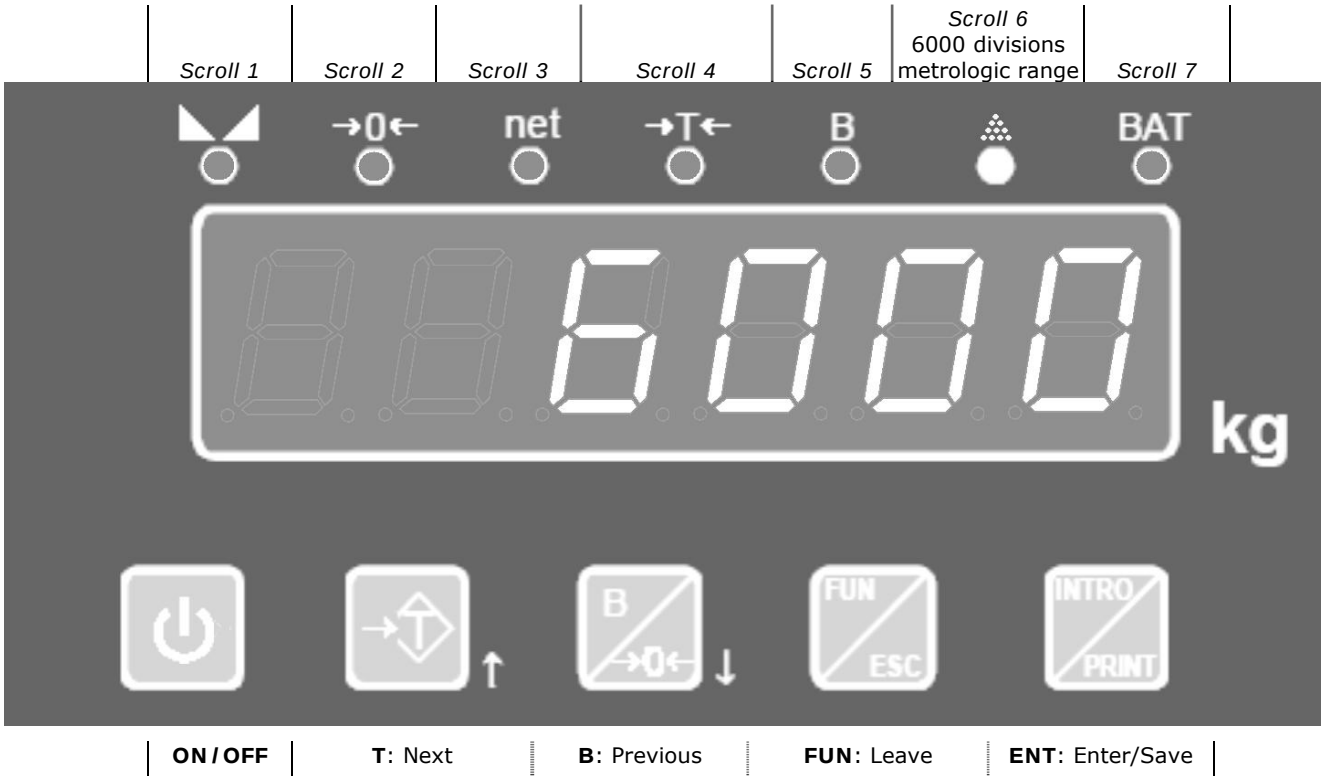
Keys



Context	*Key*	*Description (standard functions)*
Menu Navigating	**T**	**Next option**.
	B	**Previous option**.
	FUN	**Leave** or previous level.
	ENT	**Enter** submenus.
Entering data of 3 figures or less	**T**	**Increase**. If kept pressed, **rapid increment** will be done when scroll finishes.
	B	**Decrease**. If kept pressed, **rapid decrement** will be done when scroll finishes.
	FUN	Previous level.
	ENT	**Saves**.
Entering data of over 3 figures	**T**	**Increase** digit.
	B	**Change** the digit to modify (indicated by the corresponding decimal point).
	FUN	Previous level.
	ENT	**Saves**.

QUICK CALIBRATION

Enter Programming Menu (**FUN+T** during initial scroll)

Auto Calibration

I. Weight format (**RANGE**): **ENT** to enter, **FUN** to leave

II. AUTO CALIBRATION (**-AUTO-**: **ENT** to enter, **FUN** to leave):

a. Total capacity of load cells should be entered.

b. Average ohms value offered to each load cell of sum junction box has to be set. System reset will be made after validating with **ENT**.

Manual Calibration

1. Weight format (RANGE): **ENT** to enter, **FUN** to leave
   - Classic mode: Choose metrologic range
   - Manual mode::
     - Set number of decimals (**DECIM**)
     - Set weight fraction (**-FRAC-**)
     - Set span range (-**SPAN-**)
   - *EXAMPLE: Scale of MAX=15kg at 3000 divisions (assuming compatible load cell set):*
     - *Weight fraction calculation:* $\frac{15000g}{3000div} = 5g$
     - ***DECIM:*** *3*
     - ***-FRAC-:*** *0.005*
     - ***-SPAN-:*** *15.000*
2. CALIBRATION ZERO (**-ZERO-**: **ENT** to execute)
   - Make platform zero calibration without weight (only with dead weight)
3. WEIGHT CALIBRATION (**ADJUST**: **ENT** to enter, **FUN** to leave)
   - Known weight should be put at platform (recommended near MAX/2)
   - Adjust as desired (**ENT** to save, **FUN** to leave):
     - **NORMAL**: Normal mode weight visualization is done. To turn displayed weight to the known:
       - Increment (**6**) or decrement (**4**)
       - Quick Increment (**8**) or quick decrement (**2**)
     - **MANUAL**: Last detected weight is displayed:
       - Known weight can be directly set.
   - High resolution adjustment may be done (**ENT** to save, **FUN** to leave):
     - **FINE**: High resolution weight visualization is done (x10). To turn displayed weight to the known:
       - Increment (**6**) or decrement (**4**)
       - Quick Increment (**8**) or quick decrement (**2**)
4. LEAVE PROGRAMMING MENU (**FUN** as many times as needed)

PROGRAMMING MENU

To enter, press FUN+T during the initial *scroll*.
To leave, press FUN from the first menu level.

The options and/or add-ons are shaded.

	Option	*Description*	*Actions*
➢ **RANGE**	-	Choice of the range parameters	**ENT** to enter a submenu and save. **FUN** to cancel and leave. **ENT** to save.
➢ **METRO.R**	-	Metrological ranges	**T/B** to change option. **ENT** to save. Before showing each full scale, the number of divisions corresponding to each of them will be indicated with M symbol (6000 when set, 3000 otherwise). *NOTE: When entering the option, the metrological scales will be shown in increasing order, always from the first option.*
➢	**3,000**	1 g.	-
➢	**6,000**	2 g.	-
➢	**6,000**	1 g.	-
➢	**15,000**	5 g.	-
➢	**15,000**	2 g.	-
➢	**30,000**	10 g.	-
➢	**30,000**	5 g.	-
➢	**60,000**	20 g.	-
➢	**60,000**	10 g.	-
➢	**150,00**	50 g.	-
➢	**150,00**	20 g.	-
➢	**300.0**	1 kg.	-
➢	**300,00**	50 g.	-
➢	**600.0**	0.2 kg.	-
➢	**600.0**	0.1 kg.	-
➢	**1500.0**	0.5 kg.	-
➢	**1500.0**	0.2 kg.	-
➢	**3000**	1 kg.	-
➢	**3000.0**	0.5 kg.	-
➢	**6000**	2 kg.	-
➢	**6000**	1 kg.	-
➢	**15000**	5 kg.	-
➢	**15000**	2 kg.	-
➢	**30000**	10 kg.	-
➢	**30000**	5 kg.	-
➢	**60000**	20 kg.	-
➢	**60000**	10 kg.	-
➢	**150000**	50 kg.	-
➢	**150000**	20 kg.	-

➢	**-SPAN-**	**(value)**	Range span	(6 decimal digits). *NOTE: Determines zero monitoring.*
➢	**-FRAC-**	**(value)**	Step resolution (weight fraction)	(0..255 fractions).
➢	**DECIM.**	**(value)**	Number of decimals	(0..3 decimals).
➢ **-ZERO-**		-	Indicator calibration zero	**ENT** to save the zero in the equipment.
➢ **ADJUST**		-	Adjusts the indicator gain	**ENT** to enter a submenu. Within the submenu: **T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save. *NOTE: Modifies the gain (GA.CONV), and consequently the fraction points (PFr) of FIL.DEP. and the maximum zero absorption of ZEROAB.*
➢	**NORMAL**	**(weight)**	Normal adjustment (as many divisions as scale divisions)	-
➢	**FINE**	**(weight)**	Fine adjustment (as many divisions as 10 times the scale divisions)	-
➢	**MANUAL**	**(value)**	Fine manual adjustment	(6 decimal digits).
➢ **-AUTO-**		-	Analog load cell autocalibration	Set **total load cell set capacity** (in kg). When validated with **ENT**, -CORR- will be displayed for a while, and correction, if exists, might be set: Set **average resistance** of each potentiometer (in ohm tenths). If no resistance should be taken in account, default 0.0 may be validated. When validated with **ENT**, ZERO will be automatically done, GAIN calculation, and indicator RESET finally will be made in order to begin to weight. *NOTE: The more capacity the more accuracy is achieved.NOTE: The more capacity the more accuracy is achieved.*
➢ **OTHERP**		-	Indicator parameters	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢	**STAB.T.**	**(value)**	Stability time	(0..255 fractions of second, approx. 0.5s). **ENT** to save. Recommended in accordance with the type of cell: -Analogue: 1..12 -Digital: 12..32 *NOTE: The greater this is, the greater the precision in the weighing, although at reduced speed.*
➢	**UNSTA.T.**	**(value)**	Unstability time	(0..255 fractions of second, approx. 0.5s). **ENT** to save. Recommended to be the same as STAB.T.
➢	**STA.WIN.**	**(value)**	Stability window	(0..255 fractions). **ENT** to save. If 0, 1/3 fraction will be applied.
➢	**FILTER**	**(value)**	Anti-oscillation filter	(0..255 samples per average within stability window). **ENT** to save. Recommended: 1..12

➢	**FIL.DEP.**	**(value)**	Internal converter filter	(0..255 internal points). **ENT** to save. When entering, a message which indicates the weighing Fraction Points is displayed. Example: P.Fr.=20 and we wish for action in 3 factions, then: VEN.FIL=20*3=60 *NOTE: The greater this is, the greater the precision in the weighing, although at reduced speed.*
➢	**GRAVI.P.**	**(valor)**	Gravity Parameter	**(**6 decimal digits: Gravity acceleration in m/s^2) **ENT** to save. Should be modified depending on Latitude and Altitude found in normalized tables. -P.1-: Local gravity parameter (By default: Barcelona). -P.2-: Destination gravity parameter. NOTE (h=height, y=latitude): g = 9,80612 - 2,5865*10-2cos2y + 5,8*10-5cos^2(2y) - 3,08*10-6h
➢	**ZEROIN**	**Yes/No**	Initial zero	**T/B** to change option. **ENT** to save.
➢	**0-MEMO**	**Yes/No**	Save manual zero to calibration zero	**T/B** to change option. **ENT** to save.
➢ *(LED)*	**LIG.DIS.**	**(value)**	Display intensity	(1..7 values). **FUN** leaves. **ENT** saves.
➢	**ZEROAB**	**(value)**	Zero absorption	(0..25.5 divisions). **ENT** save. Depends on gain. When entering, maximum value we can achieve is displayed.
➢	**NOCER.F**	**Yes/No**	Disables zero filterings	**T/B** to change option. **ENT** to save.
➢	**WEI.MIN.**	**(value)**	Minimum weighing.	(0..25.5 divisions). **ENT** save.
➢	**DEFAUL**	**Yes/No**	Returns the indicator to its defect values	**T/B** to change option. **ENT** to save. When returning to defect values, "INI.EEP" will appear whilst the system restarts.
➢	**VERSIO**	**(value)**	Shows the firmware version	-
➢	**SERIAL**	**-**	Production serial number	-
➢	**MV.CELL**	**(value)**	Shows load cell mV approximation	-
➢	**METROL**	**Yes/No**	Metrologic parameters	When activating: - Dashes will be displayed whenever the gross weight is negative. - Upper or lower dashes will be displayed at start-up if the initial zero is 8% higher or lower than the calibration zero. - There will be no zero monitoring, nor can we carry out a manual zero, if the equipment zero has exceeded the full scale by 2%. **ENT** to change option. **F** to save.
➢	**TARE.AC**	**Yes/No**	Tare activation	**T/B** to change option. **ENT** to save.

➢		**ZER.NEG**	**Yes/No**	Auto zero is made when negative stability is detected	**T/B** to change option. **ENT** to save.
➢		**REMOTE**	**Yes/No**	Remote access with REMOTE-SC	**T/B** to change option. **ENT** to save.
➢		**-PWD-**	**(value)**	Entry password configuration	(6 decimal digits). If "0", password will be disabled.
➢		**DIS.OFF.**	**Yes/No**	Do not show anything when weighing	For PLC and repeating applications, when there are another displays.
➢	*(LCD)*	**BACKLI**	**-**	Backlighting	**T/B** to change option. **ENT** to save. The auto turn off backlighting time counter remains until another weighing takes place or another key is pressed. Otherwise it is fed back.
➢	*(LCD)*		**-ON-**	Enabled	-
➢	*(LCD)*		**-OFF-**	Disabled	-
➢	*(LCD)*		**1 MIN**	1 Minute	-
➢	*(LCD)*		**5 MIN**	5 minutes	-
➢	*(LCD)*		**15 MIN**	15 minutes	-
➢	*(LCD)*		**30 MIN**	30 minutes	-
➢	*(LCD)*		**60 MIN**	60 minutes	-
➢		**AUT.OFF**	**-**	Auto power off of the equipment	**T/B** to change option. **ENT** to save. The auto power off time counter remains until another weighing takes place or another key is pressed. Otherwise it is fed back.
➢			**-OFF-**	Disabled	-
➢			**1 MIN**	1 Minute	-
➢			**5 MIN**	5 minutes	-
➢			**15 MIN**	15 minutes	-
➢			**30 MIN**	30 minutes	-
➢			**60 MIN**	60 minutes	-
➢	**CALIBR**		**-**	Parametric calibration values	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢		**ZE.CON**	**(value)**	Converter zero	(6 hexadecimal digits). **ENT** to save. Useful to not have to re-calibrate the indicator when is changed. *NOTE: See keys section enter characters A to F.*
➢		**GA.CON**	**(value)**	Converter gain	*(As Ce.CON)*

➢ **M.RANGE**		**-**	Multirrange (works as bi-scale)	**ENT** to enter a submenu. **FUN** to leave the submenu. **ENT** to save. *NOTE: Indicates multirange error whenever we try to save incompatible data (see its section at this Manual). In this case, the option is automatically disabled.*
➢	**--ON--**	**Yes/No**	Enables the option	**T/B** to change option.
➢	**METRO.R.**	**-**	Metrological ranges	**T/B** to change option. **ENT** to save.
➢		**3,000** **…**	1 g. …	(See option RANGE – METRO.R: from ranges 1 to 29)
➢	**-SAPN-**	**(value)**	First span range	(6 decimal digits). *NOTE: Determines multi-range zero monitoring.*
➢	**-FRAC-**	**(value)**	Step resolution (weight fraction) of the first range	(0..255 fractions).
➢	**DECIM.**	**(value)**	Number of decimals of the first range	(0..3 decimals).
➢ **LINEAR**		**-**	Linearisation	**ENT** to enter a submenu. **FUN** to leave the submenu. **ENT** to save. *NOTE: Indicates linearisation error whenever we try to save a weight in excess of the full-scale (see its section in this Manual). In this case, the action is not saved.*
➢	**--ON--**	**Yes/No**	Enables the option	**T/B** to change option.
➢	**POINT**	**(weight)**	Adjustment of the corrected weight point on the platform	**T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save.
➢	**POINT.M.**	**(weight)**	Manual adjustment of the corrected weight point on the platform	(6 decimal digits).
➢	**MANUAL**	**(weight)**	Manual adjustment of the real weight and the corrected weight	Used whenever we do not physically have the weight although we know there is a non-linearity. –REAL- will be displayed, allowing us to enter the real weight: (6 decimal digits). When saving, –CORR- will be displayed in order to enter the corrected weight: (6 decimal digits).
➢	**ERASE**	**Yes/No**	Delete all points	**T/B** to change option.
➢	**P.-1**	**(values)**	Point value	Shows the real weight and corrected weight of the point. If the point does not exist, EMPTY is displayed. 3-second **ENT** pressing deletes.
➢	**…**	**…**	…	"
➢	**P.- 16**	**(values)**	Point value	"

➢	**RS-232**	-	Serial communication parameters	**ENT** to enter a submenu. **FUN** to cancel and leave. **T/B** to navigate via submenus. **ENT** to save.
➢	**BAUDS**	-	Speed	**T/B** to change option.
➢		**1200-B**	1200 bauds	-
➢		**2400-B**	2400 bauds	-
➢		**4800-B**	4800 bauds	-
➢		**9600-B**	9600 bauds	-
➢		**19200-B**	19200 bauds	-
➢	**FRAME**	-	Parity configuration	**T/B** to change option. NOTE: If the receiver equipment does not support 1 *stop* bit, 2 *stop* bits will be recognized.
➢		**-N81-**	8 bits with no parity	-
➢		**-E71-**	7 bits with even parity	-
➢		**-O71-**	7 bits with odd parity	-
➢	**NUMBER**	**(value)**	Equipment number	(0..99 assignable addresses).
➢	**LOOP**	-	Cross test TX-RX	-
➢		**UART-.1**	Channel 1	**ENT** to test.
➢		**UART-.2**	Channel 2	**ENT** to test.
➢	**CONNEC**	-	Connect to…	**T/B** to change option.
➢		**-PRIN-**	Printer	-
➢		**-PC-**	PC	-
➢	**PRINTR.**	-	Type of printer	**T/B** to change option.
➢		**-STD-**	*Standard*	-
➢		**EPC.1K**	EPC1100 (Fenix)	-
➢		**CUSTOM**	TG558 (Custom)	-
➢		**PAN-10**	Panel 10 (Fenix)	-
➢		**ZEBRA**	Zebra Labeler	(Will enable LABEL and User Menu's N.LABEL)
➢		**TM-295**	TM-295 (Epson)	(And compatibles)
➢		**GERMAN**	PC	(Parametric PC data dump)
➢		**CUSTO2**	PlusII-S2B(Custom)	-
➢	**LABEL**	-	Label mask	(00h..FFh). *NOTA: See its section in this Manual.*
➢	**PROTOC**	-	Protocol	**T/B** to change option. **ENT** to save. *NOTE: Protocols subject to customisable modifications.*

➢ **SENSOC.** Sensocar

N82, continuous and by request.
By defect, the gross weight is sent continuously.
If the equipment is in a network of viewers, a viewer number different to 0 should be assigned.

Num.Visor			*(Bytes)*
0	**Response:**	Sign+weight(7)+CR	9
xy	**Response:**	xy+:+SP+Sig+weight(7)+CR	13
Undercase response (flags): **F1(bits): neg|bat|est|zer|net|T|B|M**		(xy+:+SP)+F1+weight(7)++CR	9/13
Response to battery level:		xy+:+SP+level(8)+CR Level =“NOB” (no battery) Level =”OK”,”LOW” (1 bit) Level=xxx (1 byte)	13
Generic commands:	Activation by request	S+P+CR	3
	Net Weight	S+N+CR	3
	+flags	S+n+CR	3
	Gross weight	S+B+CR	3
	+flags	S+b+CR	3
	DIG: pts. cél. xx	S+g+xx+CR	5
	DIG: neto cél. xx	S+G+xx+CR	5
	Continuous	S+F+CR	3
	Stable mode	S+E+CR	3
	Zero	S+C+CR	3
	Tare	S+T+CR	3
	Untare	S+D+CR	3
	Battery level	S+L+CR	3
	Acknowledge	S+A+CR	3
	Serial number	S+S+CR	3
	Program version	S+V+CR	3
	Intro/Print	S+I+CR	3
	Shrinked weight	S+M+CR	3
	DSD registring	S+W+CR	3
	Relay read	S+U+CR	3
	C1 Set relay action: “0”: Active “1”: Inactive	S+Y+mask(C1..C8)+CR	4
Directionable commands		S+xy+genericletter+CR	5

CR: Carriage Return (0Dh)
SP: Space (20h)
C8..C1: 8 relay masks (up to 64 relays). C1 is current.

➢ **-1- TOLEDO** -

E72, continuous mode.

		(Bytes)
Response:	STX+A+B+C+weight(6)+Tare(6)+CR+CS	18

A=x01x xnnn (n=ndec+2)
B=xx11 INSTAB OVER NEG NET
C=xxxx xxxx (SP)
STX: Start of Text (02h)
CR: Carriage Return (0Dh)
CS: Checksum (negated XOR)

➢ **-2- GRAVIT.** -

9600 N82, continuous and by request.

			(Bytes)
Continuous response:		Sign+weight(5)+mode+0+neg+zero+ tare+btare+gross+01,99+CR+LF	20
Response request:		@+weight(7)+CR	9
Unrecognised request:		@+?+CR	3
Commands :	Gross weight	GROSS+CR	6
	Net Weight	NET+CR	5

Sign: If positive, send space.
Neg: 1 if negative. 0 in other cases.
Cero (Zero: 1 if zero. 0 in other cases.
Tare: 1 if tare. 0 in other cases.
Btare: 1 if tare lock. 0 in other cases.
Gross: 1 if gross. 0 in other cases.
CR: Carriage Return (0Dh)
LF: Line Feed (0Ah)

➢ **-3- PG** -

9600 N82. Pressing FUN sends:

	(Bytes)
Sign+grossweight(7)+Sign+netweight(7)+SP+Num(2)+CR	20

Num: Viewer number
SP: Space (20h)
CR: Carriage Return (0Dh)

➢ **-4- EXA** -

N82, continuous and by request.

			(Bytes)
	Response:	STX+flags+SP(3)+weight(5)+CR+LF	12
Command	Weight	$+CR	2

Flags: "A" (stable), "!" (unstable), "I" (zero)
STX: Start of Text (02h)
SP: Space (20h)
CR: Carriage Return (0Dh)
LF: Line Feed (0Ah)
$: Dolllar (24h)

➢ **-5- PG2** -

9600 N82, continuous, stable and by request.

Continuous:

		(Bytes)
Response:	B+grossweight(7)+ T+tareweight(7)+ N+ weight(7)+ A+ SP(3)+ accweight(7)+ P+ SP+ points(7)+ CR	45

Stable/Request (with ENT accumulates and sends):

N.Indicator		*(Bytes)*
0:	P+ #weighings(7)+ B+ grossweight(7)+ T+tareweight(7)+ N+ weight(7)+ A+ SP(3)+ accweight (7)+ C+ SP+ code(7)+ CR	53
xy:	xy+:+SP+ P+ #weighings(7)+ B+ grossweight(7)+ T+tareweight(7)+ N+ weight(7)+ A+ SP(3)+ accweight (7)+ C+ SP+ code(7)+ CR	57

Option B:

		(Bytes)
Response:	C+0(6)+*+0(6)+*+0(5)+1*grossweight(7)+*+ tareweight(7)+*+weight(7)+0(2)+CR	48

Option C:

		(Bytes)
Response:	FR"PTX"+CR+LF+?+CR+LF+grossweight(7) + CR+LF+tareweight(7)+CR+LF+weight(7)+CR + LF+P1+CR+LF	43

Option D:

		(Bytes)
Response:	STX+SP(2)+weight(7)+CR+LF	12

Option E:

		(Bytes)
Response:	tarehex(3)+hexweight(3)+00h(6)+CS	13

Option F:

		(Bytes)
Response:	=+peso(6)+(2)	9

STX: Start of Text (02h)
SP: Space (20h)
CR: Carriage Return (0Dh)
LF: Line Feed (0Ah)
CS: Checksum (sum of bytes)

➢ **-6- METLER** -

E72, continuous, stable and manual (when pressing ENT).

		(Bytes)
Response (no tare):	STX+SP+sign+Weight(5)+SP+kg+CR+LF	13
Response (tare):	STX+ SP(2)+ sign+ Weight(5)+ SP+ kg+ SP+ NET+ CR+ LF	18

Sign: If positive it is SP. "-" if not.
STX: Start of Text (02h)
SP: Space (20h)
CR: Carriage Return (0Dh)
LF: Line Feed (0Ah)

➢ **-7- METSCH** -

E72, continuous mode.

		(Bytes)
Response:	STX+SP(4)+weight(5)+SP(5)+tareweight(4)+SP+A+CR	22

A: "3" if stable; "1" if not.
STX: Start of Text (02h)
SP: Space (20h)
CR: Carriage Return (0Dh)
NOTE: tare weight still not implemented.

➢ **-8- IE21.2** -

1200 O72

			(Bytes)
	Response:	STX+VIS+weight(4)+FLG+SCAR+ +0+0+FRAC+NCER+ETX	13
Com:	Weight	STX+VIS+ENQ+ETX	4

ENQ: Enquiry (05h)
VIS: Indicator number in ASCII
WEIGHT: In fractions multiplied by 3, from LSB to MSB.
FLG: "1" stable,"0" otherwise. (+8 if negative)
SCAR: "1" overload, "0" otherwise.
NCER: Number of ceros in ASCII.

➢ **-9- IE21.5** -

E72

		(Bytes)
Response:	S+FLG+SP+FLG2+SP+SP+SP+weight(6)+ +SP+"kg"+SP+CR+LF	19

FLG: "D" unstable, SP otherwise.
FLG2: "-" negative, SP otherwise.
WEIGHT: Without decimal point.

➢ **-10- IMARCH** -

N82

			(Bytes)
	Response:	STX+weight(7)+CR	9
Com:	Weight	W	1

➢ **-11- MOBBA** -

O72

			(Bytes)
	Respuesta:	STX+FLG+weight(7)+ETX	10
Comando:	Peso	STX+ENQ+ETX	3

FLG: "?" unstable, otherwise: "-" negative "+" otherwise.

➢ **-12- IE150** -

1200 N81

			(Bytes)
	Response:	weight(5)+flags+CR	7

Weight(5): If negative=> ";;)))0", if overload=> "55???0", no significative zeroes: "?"
Flags: 0+0+1+1+tare+est+weimin+zero

➢ **-13- CYB20** -

N82

			(Bytes)
	Response:	":01040C0303"+net(6)+"0000000000"+CRCascii(2)+CR+LF	33
Com:	Weight	":010400d2000623"+CR+LF	17

CRCasci(2)i: Sum of the preceding.

➢ **-14- EXA.R** -

N81

			(Bytes)
	Response:	STX+flg+weight(8)+CHKascii(2)++ETX	13
Com:	Weight	80h+numid(00h..1Fh)	2
	Broadca.	"$"	1

Weight(8) and flg as -4-
CHKascii(2): STX XOR flg XOR weight(8) XOR 0Ah
FLG: "?" unstable, otherwise: "-" negative "+" otherwise.

➢ **-15- EPEL.A** -

E81

			(Bytes)
	Response:	STX+flags+weight(8)+CR	11
Com:	Weight	$	1

(As -4-)

➢ **-16- EPEL80** -

N81

			(Bytes)
	Response:	weight(7)+CR	8
	Zero:	"0000000"+CR	8
	Negative:	"AAAAAAA"+CR	8
Com:	Weight	$	1

➢ **-17- EPEL.AN** -

N82. No decimal point is sent.

			(Bytes)
	Response:	STX+flags+weight(8)+CR+LF	12
Com:	Weight	$	1

➢ **-18- CAMP.A** -

N82

			(Bytes)
	Response:	tarehex(3)+weighthex(3)+00h(6)+ +CRC	13

CRC: Sum of the preceding.

➢ **-19- S-100** -

N82

			(Bytes)
	Cont:	STX+weight(6)+"0"+ETX	9
	Response:	STX+weight(6)+"0"+STA+ETX	10
Com:	Weight	ENQ (05h)	1

Weight(6): Reverse sending.
STA: "e"stable and no ZERO, "0" otherwise

➢ **-20- S-400** -

N82

			(Bytes)
	Response:	STX+weight(7)+ETX+CR	10

Ex.: "123.456"
Ex.: "123456."

➢ **-21- GRAVI.2** -

N82. No decimal point is sent.

			(Bytes)
	Gross:	Gross(6)+.+CR+":>"	10
(ASCII)	**Leds:**	EST+0+CER+00010+CR+":>"	11
Com:	Gross	B+R+U+T+O+CR	6
	leds	L+E+D+S+CR	5

➢ **-22- ARPEGE** -

N82. No decimal point is sent.

			(Bytes)
	Response:	W+sig+net(5)+sig+gross(5)+ STATUSascii(2)+CHKascii(2)+CR	18
Com:	Weight	G+W+CR	3

Sig: +/-

STATUS: b.6 NET, b.4 EST, b.3 CER
CHK: ADD+CPL

➢ **-23- MAREC** -

N82. No decimal point is sent.

			(Bytes)
	Response:	W+sig+net(5)+sig+gross(5)+ STATUSascii(2)+CHKascii(2)+CR	18
Com:	Weight	G+W+CR	3

Sig: +/-
STATUS: b.6 NET, b.4 EST, b.3 CER
CHK: ADD+CPL

➢ **-24- -S-**	-	N82. Sensocar natique protocol compatibilization. *(As SENSOC, but 8/10 Bytes sending as decimal point)*
➢ **-25- SPIDER**	-	Continuous and stable *(Bytes)* **Cont.:** S+SP+sta+SP(3)+net(7)+SP(2)+"kg"+CR+LF 19 **Stable:** G+SP(9)+net(7)+SP+"kg"+CRLF(2*4) 28 sta: *"S":Stable, "D":Unstable, "+":Overload*
➢ **-26- EV.2001**	-	4800 E71 *(Bytes)* **Response:** SP+SIG+net(7)+SP+kg+SP+B+ +CR+LF 16 **Com:** Bruto X+B+CR 3 *SP: Space* Sig: SP/- *CR: Carriage Return (0Dh)* *LF: Line Feed (0Ah)*
➢ **-27- APOST**	-	9600 O81 *(Bytes)* **Response:** #+CDA+data(5)+CR+status+ +CR+XOR(2)+LF 12 **Com:** Generic #+SP+CDR+LF 4 *CDR=10H, 12H, 16H, 18H, 1AH, 1CH, 14H, 20H* *Status (LSN): ERR+NEG+CER+EST* *CDA=CDR+1* *SP: Space* *CR: Carriage Return (0Dh)* *LF: Line Feed (0Ah)*
➢ **-28- PG3**	-	9600 O71. When FUN is pressed: *(Bytes)* Sign+net(7)+Sign+tare(7)+SP+Num(2)+CR 20 *Num: Indicator number* *SP: Space (20h)* *CR: Carriage Return (0Dh)*
➢ **-29- DLT-30**	-	N82, continuous and manual. *(Bytes)* **Response: (3 times)** STX+weight(7)+ETX+CR 10 **Comm:** Weight $+CR 2 *STX: Sart of Text (02h)* *ETX: End of Text (03h)* *CR: Carriage Return (0Dh)*

➢	**-30-TF-1k**	-	N82, manual (labeler) *(Bytes)* **Response:** STX+net(6)+CR+ETX 9 **Continuous sending:** ENQ 1 **Comm and Ack:** Net ACK 1 *STX: Sart of Text (02h)* *ETX: End of Text (03h)* *ENQ: Enquiry (05h)* *ACK: Acknowledge (06h)* *CR: Carriage Return (0Dh)*
➢	**-31-DAT.400**	-	N82, continuous *(Bytes)* **Response:** STX+sta+w(6)+g(6)+p(6)+ETX++CRC(2)+EOT 24 *Sta: "S"=>EST; "O"=>OVERL; E=>ERROR; M=>Motion* *STX: Sart of Text (02h)* *ETX: End of Text (03h)* *EOT: End of Transmision (04h)* *CR: Carriage Return (0Dh)*
➢	**-SEND-**	- PC sending mode	**T/B** to change option. **ENT** to save.
➢		**-CON-** Continuous	(The chain is sent continuously)
➢		**-EST-** Stable	(The chain is sent when obtaining the weight stability)
➢		**-MAN-** Manual	(The chain is sent by request, or by pressing **ENT**)
➢	**S-SEC**	**(value)** Sendings per second	(1..25 dispatches per second). *NOTE: This parameter will only take effect when the –SEND- option is set as continuous.*
➢	**LINES**	**(value)** Number of empty lines of ticket finalisation	(1..32 lines).
➢	**PRI.DEC**	**(value)** Delay per printed line	(0..15 0,5 second fractions).
➢	**RS-485**	- Which serial port is RS-485	**T/B** to change option. **ENT** to save. *NOTE: If no RS485 is present, it must be set to UART-.2*
➢		**UART-.1** Channel 1	-
➢		**UART-.2** Channel 2	-
➢	**MAN.CUT**	**Yes/No** Printer manual cutter	**T/B** to change option. **ENT** to save.

➢ **OPTION**		**-**	Additional options	**ENT** to enter a submenu. **FUN** to leave the submenu. **ENT** to save. **T/B** to navigate via submenus.
➢ ***(SC1)***	**-DSD-**	**-**	Memory aliby weighing registering	(Autodetection) **T/B** to change option. If connected to printer is set, headers, foot and big total will be printed out.
➢		**-DUMP-**	Prints and erases	-
➢		**-PRIN-**	Prints	-
➢	**2ND.SER.**	**Yes/No**	Enables second serial channel	**T/B** to change option.
➢ ***(SC1)***	**LIMIT**	**Yes/No**	Pass / no pass	**T/B** to change option.
➢ ***(SC1)***	**SEMAPH**	**Yes/No**	Semaphore and alarms	**T/B** to change option.
➢ ***(SC1)***	**DOSAGE**	**Yes/No**	Dosage of 2 products with 2 speeds	**T/B** to change option.
➢ ***(SC1)***	**DOSA.ST**	**Yes/No**	Strech/Steps dosage	**T/B** to change option.
➢ ***(SC1)***	**DOSA-6**	**Yes/No**	Dosage of 6 products	**T/B** to change option.
➢	**4-20MA**	**-**	Automat output of 4-20 mA	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢		**--ON--**	Activation	(Yes/No)
➢		**4 MA**	Zero adjust. Allows us to make an offset at the output.	**T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save. We can measure the 4-20 mA current output with a serially connected ammeter with a resistance of 560 Ω.
➢		**20 MA**	Full span adjustment. Configuration of the gain at the output.	“
➢	**0-10V.**	**-**	Automat output of 0-10 V	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢		**--ON--**	Activation	(Yes/No)
➢		**0 V**	Zero adjust. Allows us to make an offset at the output.	**T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save. We can measure the 0-10V indication output directly with a voltimeter.
➢		**10 V**	Full span adjustment. Configuration of the gain at the output.	“

	(SC1)	**4.20-3R**	**Yes/No**	Automat output of 4-20 mA with 3 relays	**T/B** to change option. **ENT** to save. 4-20 mA or 0-10V output may be activated both with relay application. Only Relays 1, 2 and 3 will work.
➢	*(SC1)*	**RADIO**	**-**	Via radio (433 MHz)	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢			**--ON--**	Enables the option	(Yes / No)
➢			**-CHAN-**	Channel number	(0..63 400 kHz channels' gap). **ENT** to save. Channel 26 is the central channel (433 MHz).
➢			**-POW-**	Power to irradiate in the transmission	**T/B** to change option. **ENT** to save.
➢				**-20DBM**	-
➢				**-2 DBM**	-
➢				**6 DBM**	-
➢				**20 DBM**	-
➢	*(SC1)*	**IND.REP**	**-**	Intelligent Indicator /Repeater pair	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢			**--ON--**	Activation	(Yes/No) 2nd RS232 is used by data transfers. 1st RS232 keeps free.
➢			**REPEAT**	Repeater/Indicator	(Yes/No) If set, it works as a repeater. Otherwise, normal indicator is assumed. -YES-: If protocol is set to SENSOC, overload will be detected following local SPAN range. 4-20mA, 0-10V and Relays can be used locally (only limits)
➢			**-KEYS-**	Repeater keys enabling	(Yes/No)
➢			**RE-GEN.**	Signal regeneration	(Yes/No) If repeater, frames will be repeated and transmitted, in order to achieve twice the distance (useful when wireless and RS485) NOTE: It will not work if requests are required by selected input protocol.
➢			**RELAYS**	This equipment is working with relay hardware	(Yes/No) It may be set only in the equipment having physically relay hardware.
➢			**ERR.COM**	Disable "ERRCOM" messages if communication error	(Yes/No)

➢ **PROTOC**	Input protocol	(If repeater) **T/B** to change option. **ENT** to save.
➢	**SENSOC**	(See RS-232->PROTOC->SENSOC) **Indicator** mode: -Weighing equipment (**emitter**). -Relays flags are sent. **Repeater** mode: -Weighing remote display (**receiver**). -Rapid tare, manual tare, zero, net/gross and ENT are sent. -Relay data is sent.
➢	**SOEHNL**	*(Bytes)* **Response:** "U"+under+over+sta+11SP+sig/SP+w(5)+SP+"kg"+CR+LF 26 EX: "U001 1,110 kg "
➢	**SYSTEC**	*(Bytes)* **Response:** S+SP(est)/D+3SP+w (7)+SP+"kg"+CR+LF 17
➢	**SYS.MUL**	*(Bytes)* **Response:** "W"+numind(2)+"S"+[SYSTEC] 20
➢	**TOLEDO**	*(Bytes)* **Response:** stx+decim[0..3]+flg+net(5)+SP+tare(5)+ CR 15 E71 flg: 3:STS, 2:over, 1:neg, 0:net
➢	**TOLED.2**	*(Bytes)* **Response:** stx+status(3)+w(6)+tare(6)+CR+ CRC(optional) 17 No decimal point. status(1)[2..0]: 0,1,2(0dec)..7(4dec) status(2): 0:net, 1:neg, 2:scar, 3:inest
➢	**S-400**	*(Bytes)* **Response:** stx+w(7)+CR 9 Ex: "123.456" Ex: "123456."
➢	**-EPEL-**	*(Bytes)* **Response:** stx+3SP+w(7)+CR 12
➢	**IE-21.5**	*(Bytes)* **Response:** S+D(sta)/SP+SP+sig/SP+2SP+w(7)+SP+"kg"++SP+CR 18
➢	**IE-150**	*(Bytes)* **Response:** w(5)+status+CR 7 status: 2:NET, 1:EST, 0:zero ";;)))0" => neg "55???0" => over
➢	**S-120**	*(Bytes)* **Response:** stx+w(6)+SP+CR+LF 10
➢	**MATRIX**	*(Bytes)* **Response:** "<"+3SP+sig/SP+w(7)+SP+status(2)+ CR+LF 17 status(1): N => net status(2): M =>unsta, O=> over
➢	**EUROBI**	*(Bytes)* **Response:** stx+status+SP+w(7)+CR 11 status: bit1(NET), bit6(STA)

➢	**-HBM-**		*(Bytes)*
		Response: SP+status+SP+sig+w(7)+2SP+unit(2)+CR+ LF	17
		status: "N" => net sig: "-" => neg, "o" => zero unit: "kg" => w, "c"+SP => pieces	
➢	**AVERY**		*(Bytes)*
		Response: stx+3SP+"99"+SP+w(7)+SP+"kg"+CR+LF	18
➢	**SCHENC**		*(Bytes)*
		Response: stx+2SP+w(7)+2SP+tare(7)+SP+status(2)+ LF+CR	24
		status(1): asciihex de: 1:STA, 2:ZER, 3:NET	
➢	**GRAVIT**		*(Bytes)*
		Response: stx+"00"+w(6)+tare(6)+"0"+CR	17
➢	**COUGAR**		*(Bytes)*
		Response: stx+status(3)+weight(6)+tare(6)+CR+CRC	18
		status(1): 001xx010 = 0 decim; 001xx011 = 1 dec, ... status(2): Bit.3=instab; Bit.2=overl; Bit.1=neg	
➢	**LAUMAS**		*(Bytes)*
		Response: &+N+w(6)+L+gross(6)+\+CRCasciii(2)+CR	19
➢	**-S-**		*(Bytes)*
		Response: sig+w(6/7)+CR	8/9
➢	**-EXA-**		*(Bytes)*
		Response: stx+status+SP+w(7)+CR	11
		status: 0+0+1+0+zer+manualw+tare+notare *If EST => flg=flg+20h*	
➢	**HBM.AED.**		*(Bytes)*
		Response: SP/"-"+w(7)+CR+LF	10
		No significative zeros are sent.	
➢	**MARECH.**		*(Bytes)*
		Response: W+sig+net(5)+sig+gross(5)+ STATUSascii(2)+CHKascii(2)+CR	18
		Com: G+W+CR	3
		STATUS: b.6 NET, b.4 STA, b.3 ZER	
➢	**-TR.60-**		*(Bytes)*
		Response: STX+P+w(8)+CRC+CR	12
		Response: STX+B+w(8)+T+w(8)+N+w(8)+ +CRC+CR	30
➢	**-DFI-**		*(Bytes)*
		Response: s+XXX.XX+SP+u+SP+z+SP+py+SP+LB+ +CR+LF	19
		Remote zero: "p601"+CR	5
➢	**X-3000**		*(Bytes)*
		Response: w(1..7)+CR+LF	3..9
➢	**DAT400**		*(Bytes)*
		Response: STX+sta+w(6)+gross(6)+peak(6)+ETX+ +CRC(2)+EOT	24
➢	**-TA5F-**		*(Bytes)*
		Response: "$"+num(2)+sig(SP/-)+SP+pts(6)+CR	12
		Continuous: "$TE"+numid(2)+CR	6
		Rem. Zero: "$ZE"+numid(2)+CR	6
➢	**PIC800**	*N81@1200*	*(Bytes)*
		Response: STX+E+SP+C+SP+Sig+net(7)+ETX+ +CHK(2)+LF+CR	18
		Comm: "P"	1
		E= '1' (if stable). Else: '0' C=20h. If overload: '1'	
➢	**PT800**		*(Bytes)*
		Response: STX+SP(2)+Sig+net(5)+ETX+CR	11

➢ *(SC1)*	**BI.SCAL**	-	Bi-scale	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢		**--ON--**	Activation	(Yes/No)
➢		**METRO.R**	Metrologic ranges	**T/B** to change option. **ENT** to save. (See RANGE – METRO.R: Ranges from 1 to 29)
➢		**-SPAN-**	Bi-scale span range	(6 decimal digits).
➢		**-FRAC-**	Bi-scale weight step resolution	(0..255 fractions).
➢		**DECIM.**	Bi-scale number of decimals	(0..3 decimals).
➢		**ZERO**	Bi-scale zero	**ENT** to save bi-scale calibration zero.
➢		**ADJUST**	Bi-scale fine adjust	**T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save.
➢ *(SCmin)*	**PURSE**	**Yes/No**	Public scale – purse function	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢ **CONFIG**		-	Indicator parameters dumping through PC	**ENT** to wait for orders (-WAIT- is displayed) from the SENSODATA configuration software (supplied separately). Sample ticket will be printed every time this option is entered.
➢ **LANGUA**		-	Language	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus. Inside submenu: **T/B** to change option. **ENT** to save.
➢	**ESPAÑA**	**Yes/No**	Spanish	-
➢	**PORTUG**	**Yes/No**	Portuguese	-
➢	**FRANCE**	**Yes/No**	French	-
➢	**ITALIA**	**Yes/No**	Italian	-
➢	**ENGLAN**	**Yes/No**	English	-
➢	**GERMAN**	**Yes/No**	German	-

Additional extensions

Options which can be enabled and personalised on demand.

Multirrange

This allows us to work as a bi-scale, with dual scale. The bigger scale is adjusted normally, whilst the lesser one can have a scale up to 5 times smaller. In this manner, every time the minimum weighing is detected (EN45501:1992/AC:1993 4.10), we start by seeing the weight on the platform in the small-scale. When the full-scale is exceeded, it automatically switches to the first scale, thus allowing us to achieve much greater resolution around the zero, with the same, generally high, full-scale.

Follow these steps to configure the option:

- Configure the parameters of the general greater scale (full, fraction and number of decimals).

- Configure the parameters of the multirange lower scale (full, fraction and number of decimals).

- To enable it, select the option.

Should the additional one be active, and the values entered in both the ESCALA (SCALE) and MULTIR (MULTIRANGE) menus be incompatible, an **error** message will be displayed, automatically disabling the multirange activation.

Incompatibility will be detected when the general greater scale fraction value (in grams) exceeds by more than 5 times the multirange lower scale fraction, in the same conditions. The **fraction** values and the number of **decimals** depend on this.

The user shall be responsible for configuring a general **full** scale **greater** than the multirange full-scale

Linearisation

This characteristic allows us to solve the non-linearities of a system by way of correction points.

In order to introduce the correction points (up to 18 points with zero and full-scale), we have 3 possibilities to choose from, as is most suitable in each case (see *Programming Menu* for further information):

1.POINT: Similar to an adjustment, the weight shown by the system (always in real time) will be offset.

2.POINT.M: Similar to a manual adjustment, the weight shown by the platform will be displayed (with **ENT** it will be updated as often as necessary). Use **NUM** to enter the corrected weight.

3. MANUAL: Use **NUM** to enter both the weight of the platform and the corrected weight.

If there is no room for more points, FULL will be displayed when entering a correction point.

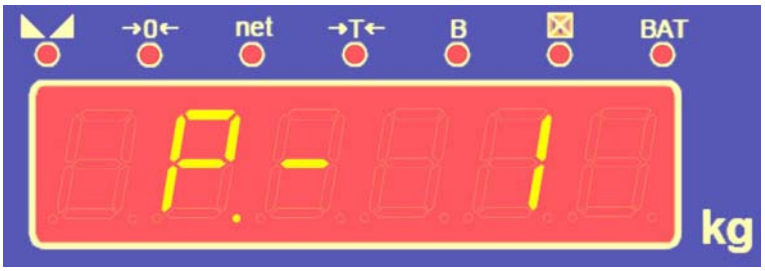
To check that the points database is **empty**, see Point 1. If it is empty, there is no point introduced.

The system classifies and reorders the points **upwards** throughout the 16 positions, regardless of the order in which they were entered.

Once the zero is complete, we can start up the system, always within the same scale, by following these steps:

-By way of one of the 3 ways for entering points, entering the required points one by one.

-These are then checked, navigating through the display/delete menu points section (the symbol "CB" will appear for a moment with the real weight to be corrected, before displaying the corrected weight of the point).



- Enable the function.

The ideal **full-scale** and **zero** values will be presupposed (i.e., fixed).

If the linearisation remains active, its action will also affect the **setting** of the *Programming Menu*.
This characteristic can be used along with any other addition or option, except with the **relay programmes**.

SENSORED

The network serial protocol (cabled –RS485- or via radio) is based on the exchange of messages between a single master (normally a PC) and a network of intelligent slaves with memory (in this case, the industrial weighing viewers).

The protocol aims to solve three groups of needs:

1- Remote, centralised configuration of the slaves: By way of transfers, the *master* can configure, at any moment and in real time, all the SENSORED admitted slave variables.

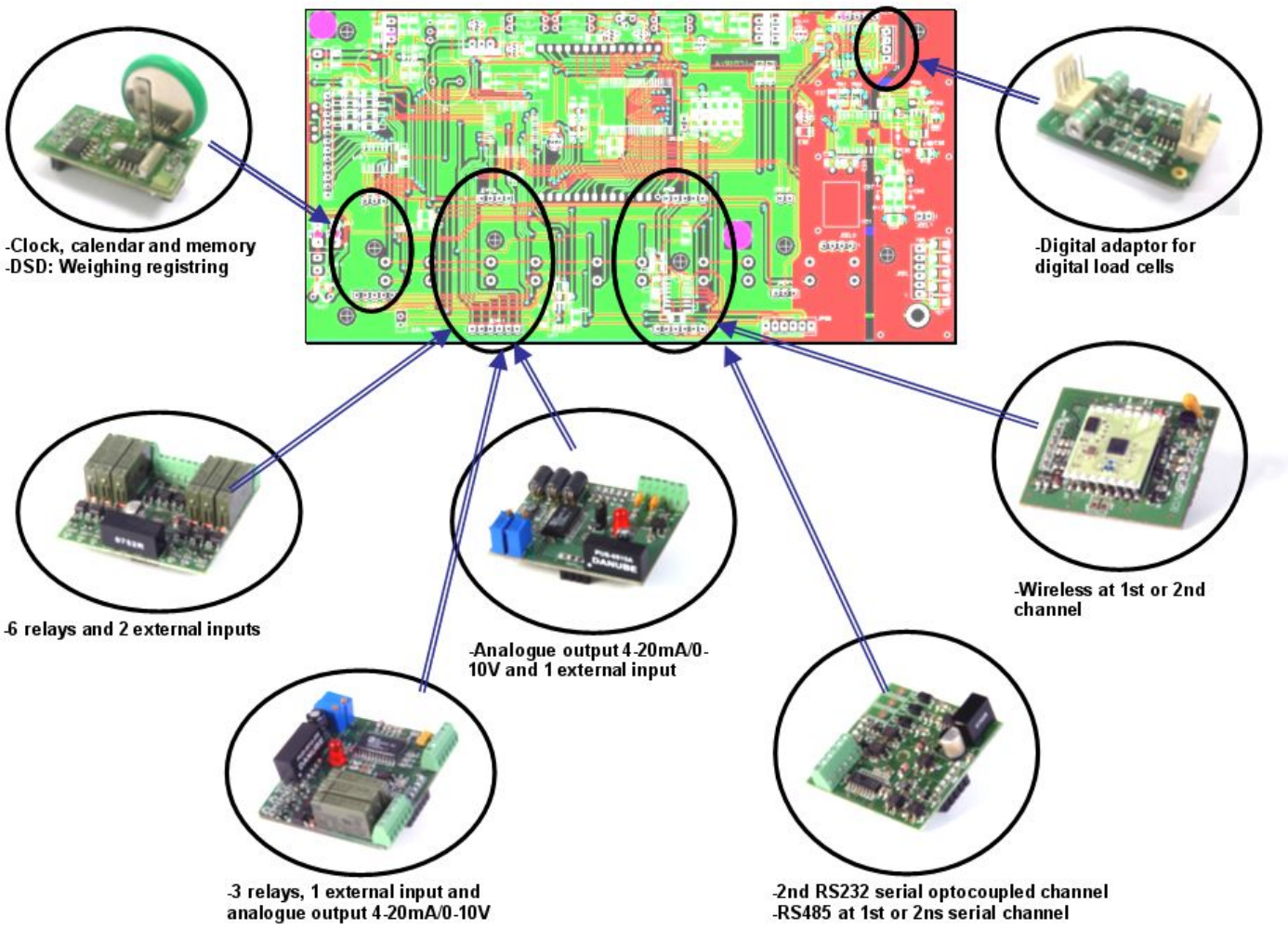
2- Handling of the data stored in the slaves: The master can interact with each slave, reading and deleting the SENSORED separately stored databases.

3-Centralisation of the processes in a single database: In the master we can process and store all the required data which SENSORED allows us to handle, using its facility to encapsulate the data in upper level applications for work with databases.

SENSORED variables:

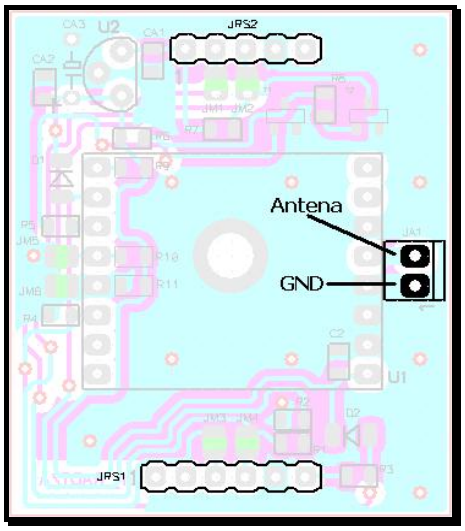
VARIABLE	RANGE OF VALUES
Operator number or similar	00000h .. FFFFFh
Target weight or similar	00000 .. 99999 (weight units)
Weight OK or similar zone	± 00000 .. ± 99999 (weight units)
Waiting time or similar	00h .. FFh (time units)

Optional hardware parts


-Clock, calendar and memory
-DSD: Weighing registring
-Digital adaptor for digital load cells
-6 relays and 2 external inputs
-Analogue output 4-20mA/0-10V and 1 external input
-Wireless at 1st or 2nd channel
-3 relays, 1 external input and analogue output 4-20mA/0-10V
-2nd RS232 serial optocoupled channel
-RS485 at 1st or 2ns serial channel

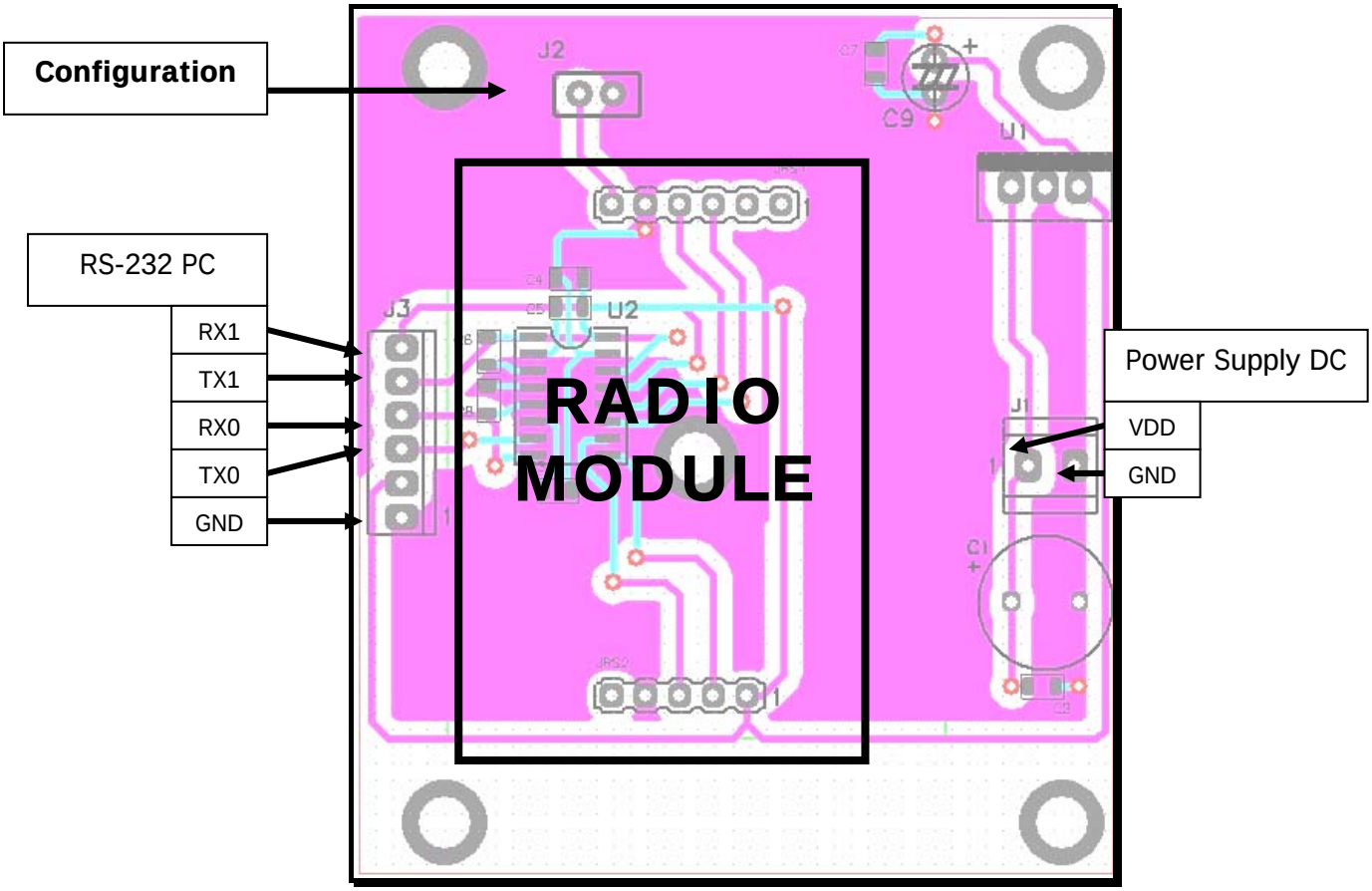
SC Additional via radio (Wireless) (SC1)

Allows us to transfer the first or second serial channel by radio.



WIRELESS PC BOX

1. Open serial communications port COM1, COM2 or another (COMx).
2. Edit window values.
3. Turn box onto Configuration Mode (*JUMPER*) J2
4. Press “CONFIG!”.
5. Finish with “Salir”.



IF ERROR

- Check box’s RS232 cable
- Try with 500 or 1000 “Adjust” values.
- Box’s Configuration Mode should be ensured.

MESSAGES

-Messages are displayed at window’s top:

-Background green: Application is wating for being manipulated.

-Background yellow: Application is processing data.

-Background red: Application has detected an error.

SC Additional 2nd Series

This will allow us to have a second serial channel for a printer. As usual, we can also connect another printer or a PC to the first serial channel.

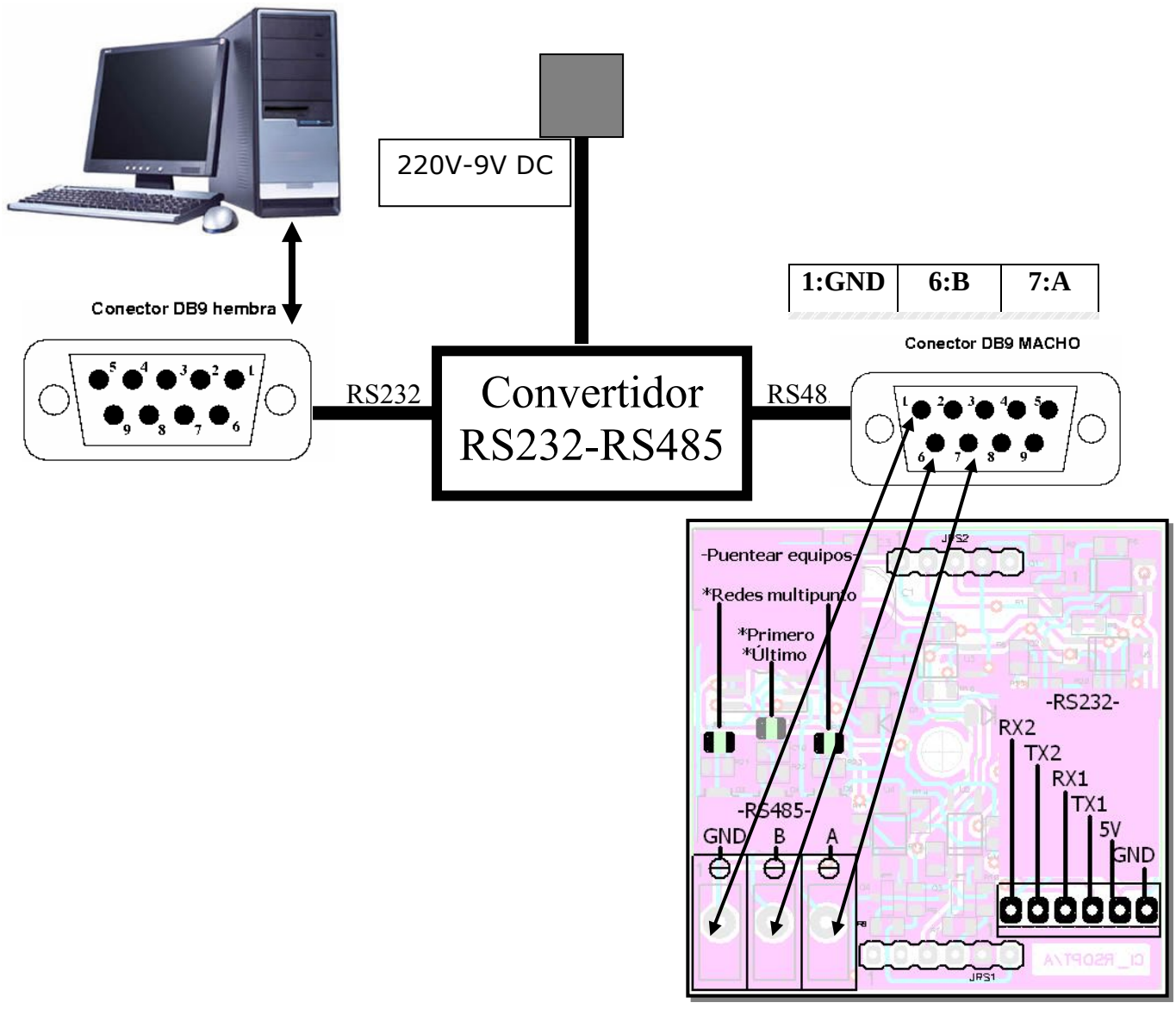
SC Additional Optocoupled Serial Channels

The two implementable serial channels will have optocoupled input and output.

SC Additional Optocoupled RS-485

One of the RS-232 serial channels may be transformed into optocoupled RS-485.

RS485 PC BOX



SC Additional Clock/Calendar and Memory

This will allow us to have a clock (hours, minutes and seconds) and a calendar (day, month and year). Basically, we can register tickets with the date and time they were carried out, and also have additional memory for the storage of data.

SC Adicional DSD (Registro de pesadas) (SC1)

Number of weighing, date, time and net weight of every weighing will be registered in internal eeprom memory, that can be printed or downloaded through a PC, until a maximum of 4000 weighings. If memory is full, "DSD" message will be displayed each time weighing is made. Frame (to PC or printer) is 30 Bytes long:

SYMBOLS:

NNNN AA/MM/DD HH:MM sig+weight(7)+CR+LF

DESCRIPTION:

RegNumber(4)+SP+Year(2)+"/"+month(2)+"/"+day(2)+SP+hour(2)+":"+min(2)+SPACE+sign+weight(7)+CR+LF

EXAMPLES:

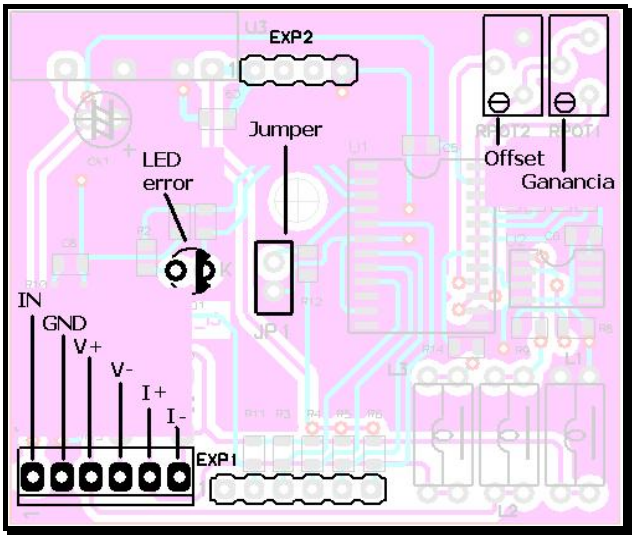
```
0001 08/07/11 17:31 +123.460
0002 08/06/29 08:49 +  1.360
0003 08/07/02 18:02 +  0.800
```

SC Additional 4-20mA and External Input

Integration of the weight output on screen for action in a 4-20mA automat.

SC Additional 0-10V and External Input

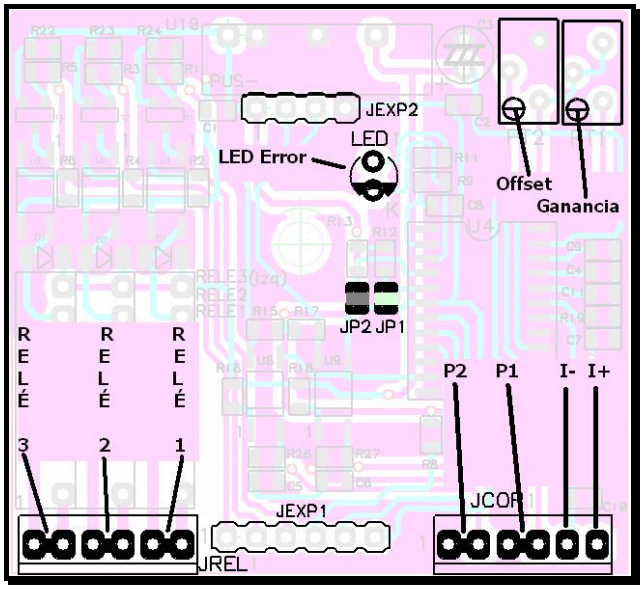
Integration of the weight output on screen for action in a 0-10V automat. The calibration of the 0Vs and their gain will be carried out using potentiometers. Always place, by defect, the indicated *jumper*. This allows the option of using an external optocoupled input.



NOTE: Without the *jumper* we achieve 0-20 mA (option 0-10V) and 0-24 mA (option 4-20mA)

SC Additional 4-20mA, 3 relays and External inputs (SC1)

Relay and analog outputs integration for 4-20mA automata (or 0-10V if JP2 is opened and JP1 is closed, with 470Ω load resistance). Activation and calibration is done through 4-20 mA:



External inputs functionality:

-P1: TARE

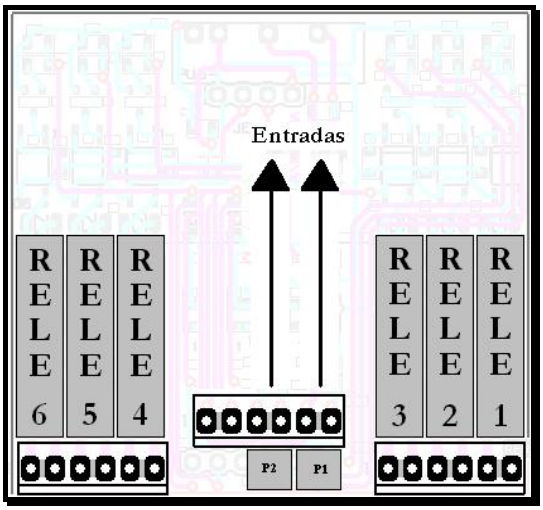
-P2: START/STOP/ACCUMULATION

SC Additional 6 Relays (SC1)

Plate with 6 relays for use in limits and dosages (see Relay Programmes in the User Manual):

- Free of potential
- Circuit breaker in NA (Normally Open)
- Switching of up to 5A / 240 V

It also has 2 optocoupled inputs with 12V tension reference for a power-free circuit breaker.



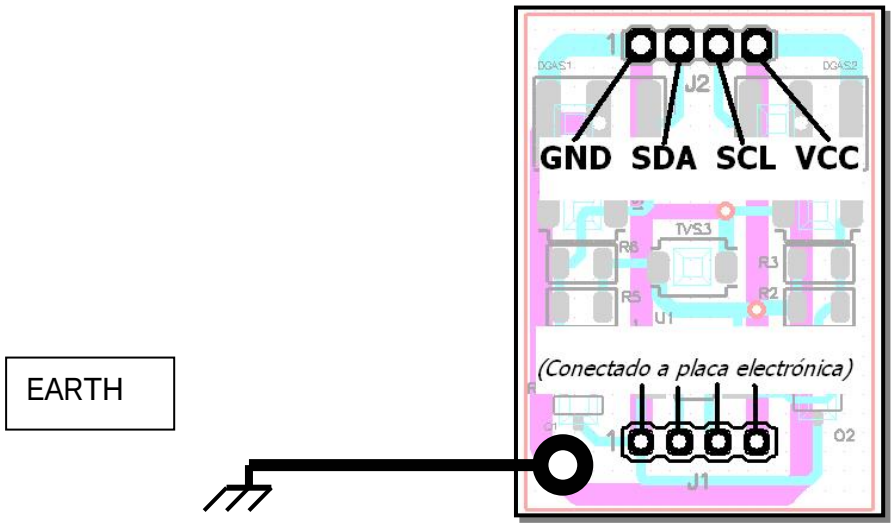
External buttons P1 and P2 have the *standard functions*:

-P1: Selection of incremental formula.

-P2: Running / Halt / Validation

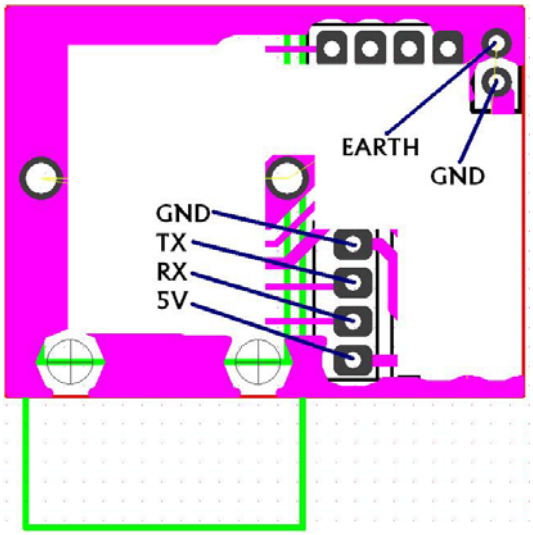
SC Additional Digital (SC1)

Setting up of the equipment *hardware* for a Digital Viewer of up to 8 *Sensocar* digital cells (up to 16 *Sensocar* digital cells: please check):



SC Additional Ethernet

Hardware Ethernet implementation for the indicator. It supports:



a. Autoconfigurable UDP/IP and TCP/IP **IP address**:
   i. **Internet** data transfer (public IP)
      1. Control from customer place
      2. Control from user place
      3. **Remote weight repetition** from any place of the World
   ii. **Intranet** data transfer (private IP)
      2. Control from user's factory
      3. **Remote weight repetition** in factory

b. Indicator serial data can be obtained from PC, as easy as clicking on its **IP address** (port 10001) (**xxx.xxx.xxx.xxx:10001**).

c. Virtual **COM port** for emulation and old PC applications compatibility.

d. **Firmware updating** with FlashMagic through Ethernet.

e. Take profit of already installed ethernet cable installation.

f. RS232 cable replacement for **RJ45 Ethernet**.

NOTE: Ethernet cable should be standard (if router connection), or crossed (if P2P PC connection)

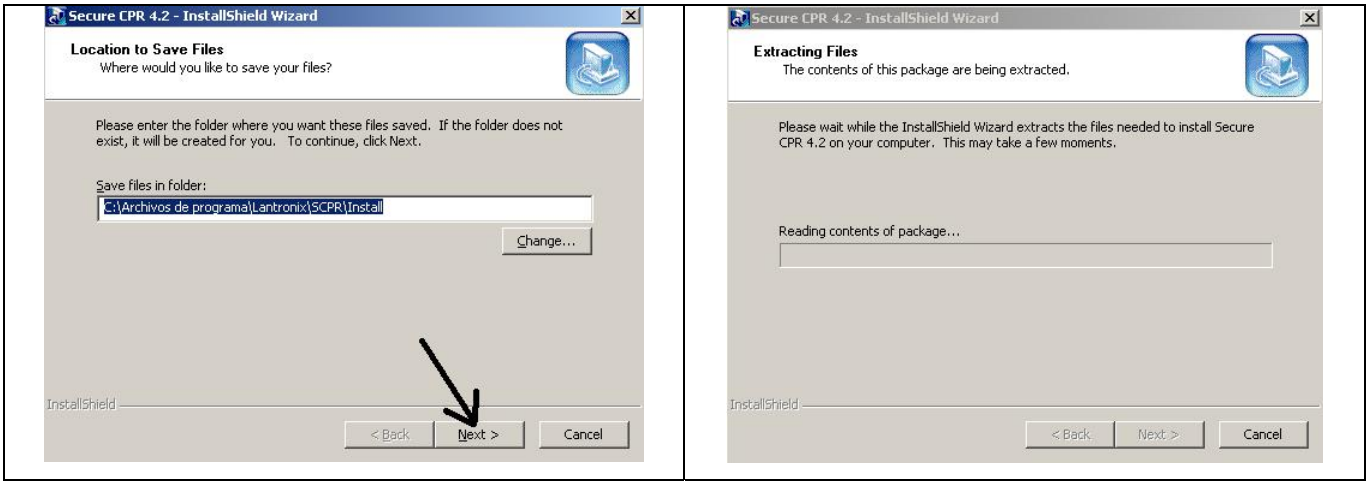
Secure CPR Software Installation (Sensocar CD)

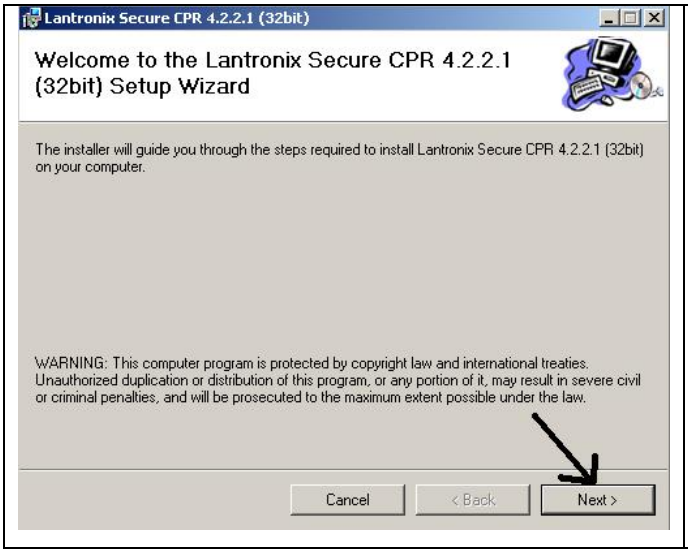
With this software, next both can be reached:

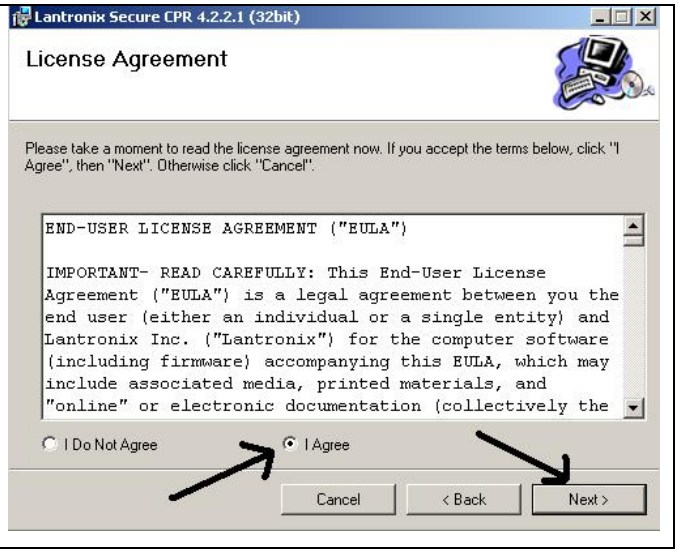
a. Indicator access through DHCP dynamically obtained IP as: **xxx.xxx.xxx.xxx:10001**

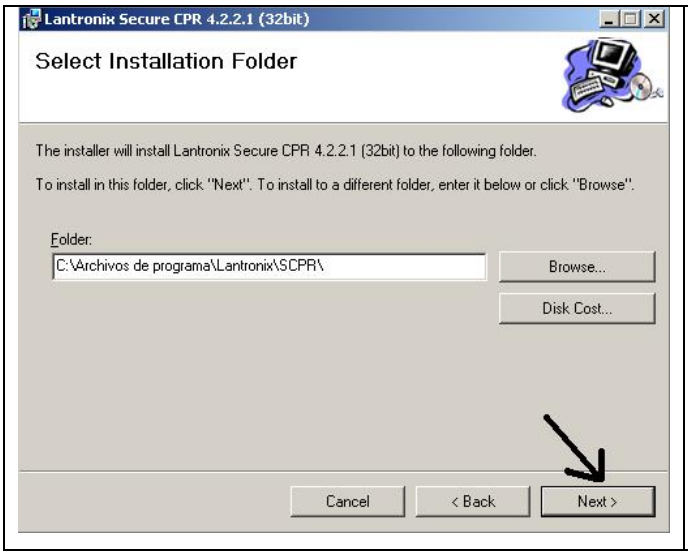
b. Indicator access through virtual COM port: **COMxx**

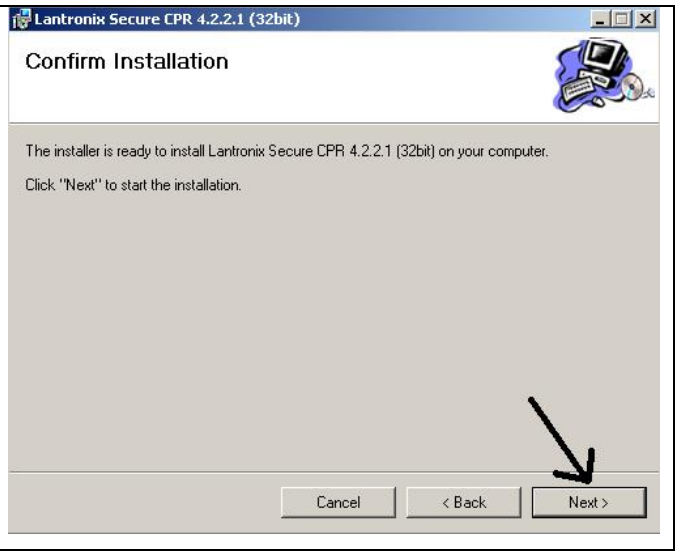
1.INSTALLATION

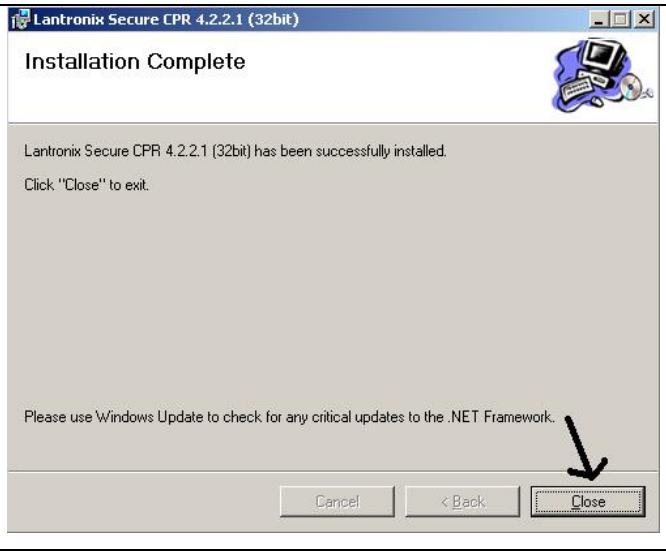

Secure CPR 4.2 - InstallShield Wizard
Location to Save Files
Where would you like to save your files?
Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next.
Save files in folder:
C:\Archivos de programa\Lantronix\SCPR\Install
Change...
InstallShield
< Back
Next >
Cancel
Secure CPR 4.2 - InstallShield Wizard
Extracting Files
The contents of this package are being extracted.
Please wait while the InstallShield Wizard extracts the files needed to install Secure CPR 4.2 on your computer. This may take a few moments.
Reading contents of package...
InstallShield
< Back
Next >
Cancel


Lantronix Secure CPR 4.2.2.1 (32bit)
Welcome to the Lantronix Secure CPR 4.2.2.1 (32bit) Setup Wizard
The installer will guide you through the steps required to install Lantronix Secure CPR 4.2.2.1 (32bit) on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

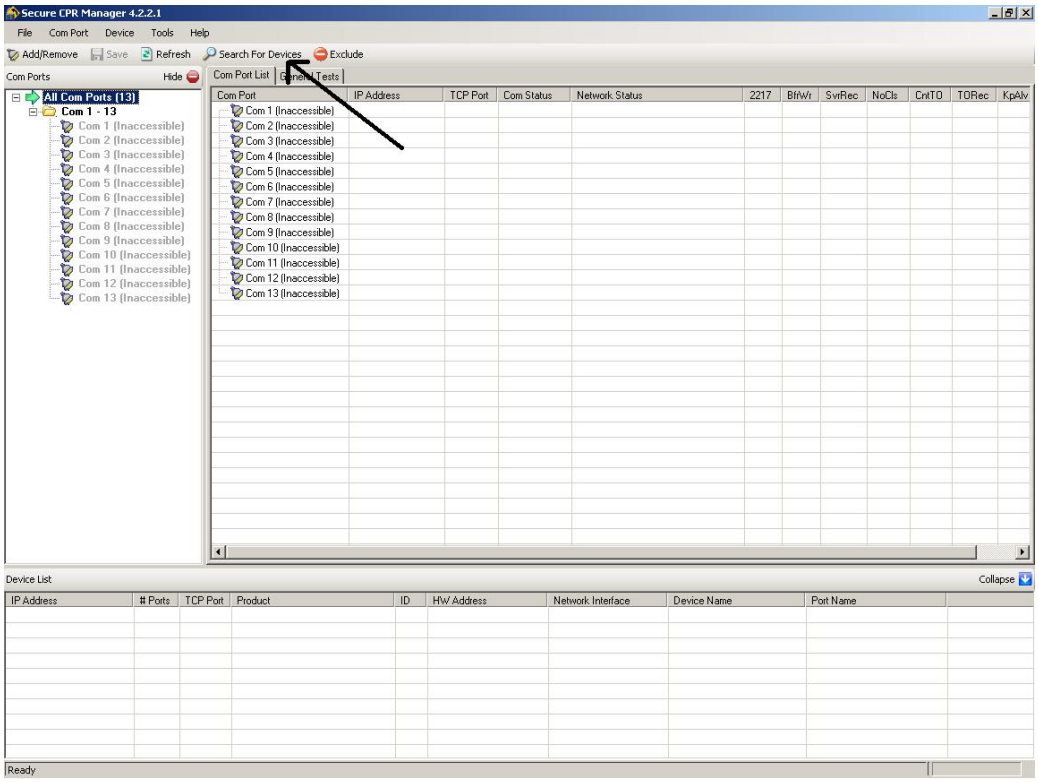

Lantronix Secure CPR 4.2.2.1 (32bit)
License Agreement
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
END-USER LICENSE AGREEMENT ("EULA")
IMPORTANT- READ CAREFULLY: This End-User License Agreement ("EULA") is a legal agreement between you the end user (either an individual or a single entity) and Lantronix Inc. ("Lantronix") for the computer software (including firmware) accompanying this EULA, which may include associated media, printed materials, and "online" or electronic documentation (collectively the
I Do Not Agree
I Agree
Cancel
< Back
Next >

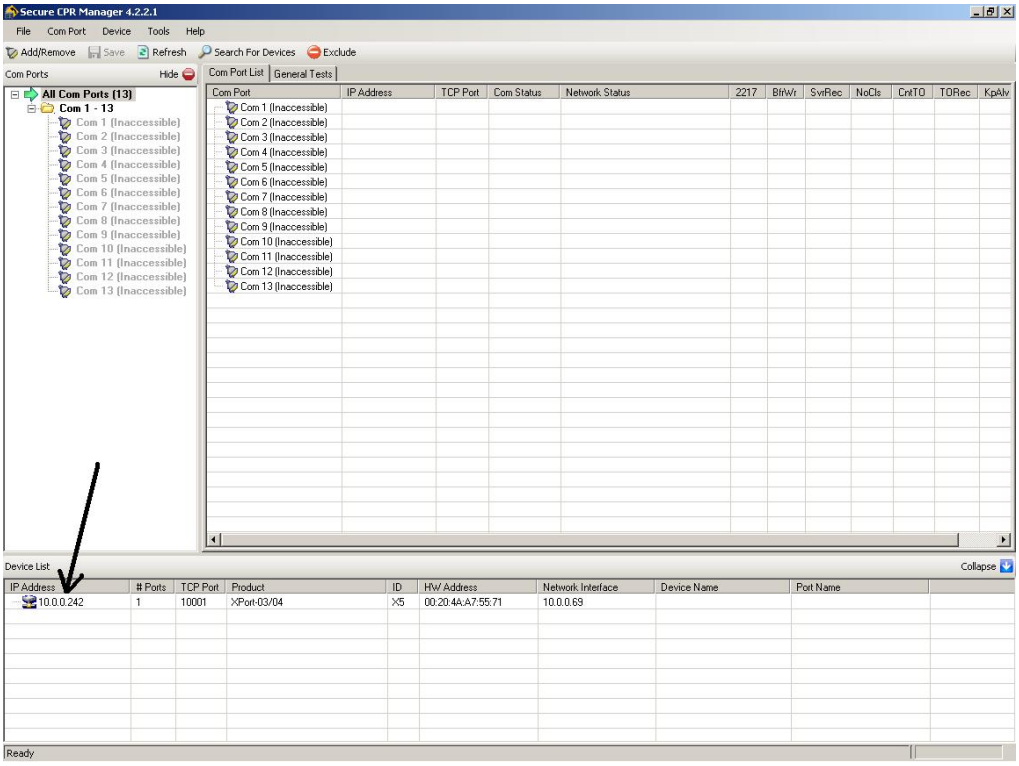

Lantronix Secure CPR 4.2.2.1 (32bit)
Select Installation Folder
The installer will install Lantronix Secure CPR 4.2.2.1 (32bit) to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Archivos de programa\Lantronix\SCPR\
Browse...
Disk Cost...
Cancel
< Back
Next >


Lantronix Secure CPR 4.2.2.1 (32bit)
Confirm Installation
The installer is ready to install Lantronix Secure CPR 4.2.2.1 (32bit) on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

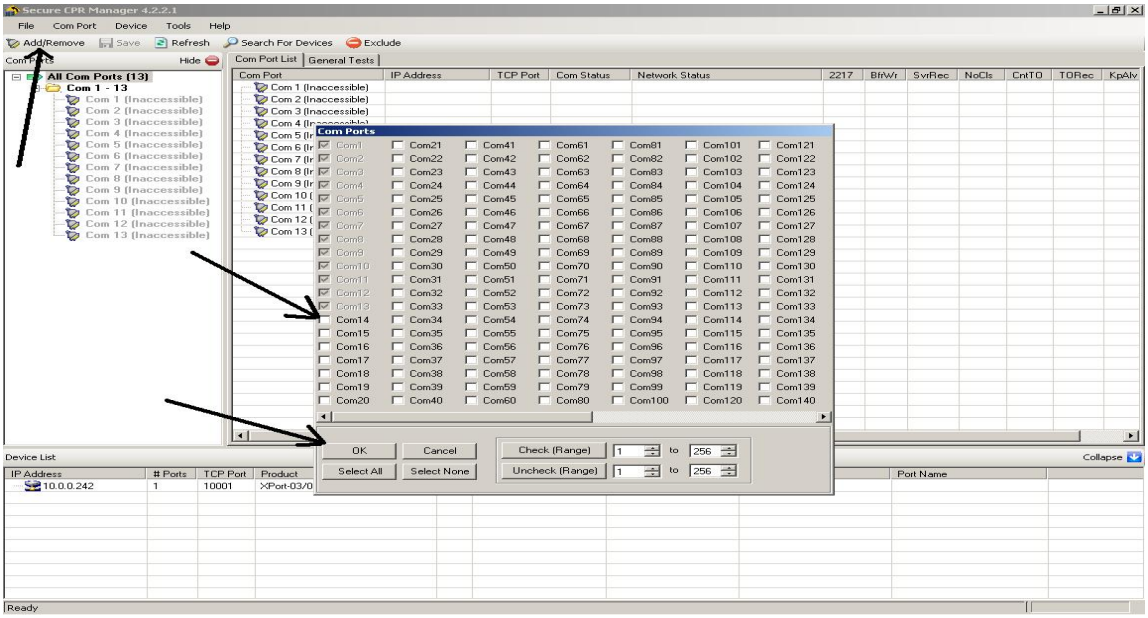

Lantronix Secure CPR 4.2.2.1 (32bit)
Installation Complete
Lantronix Secure CPR 4.2.2.1 (32bit) has been successfully installed.
Click "Close" to exit.
Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel
< Back
Close

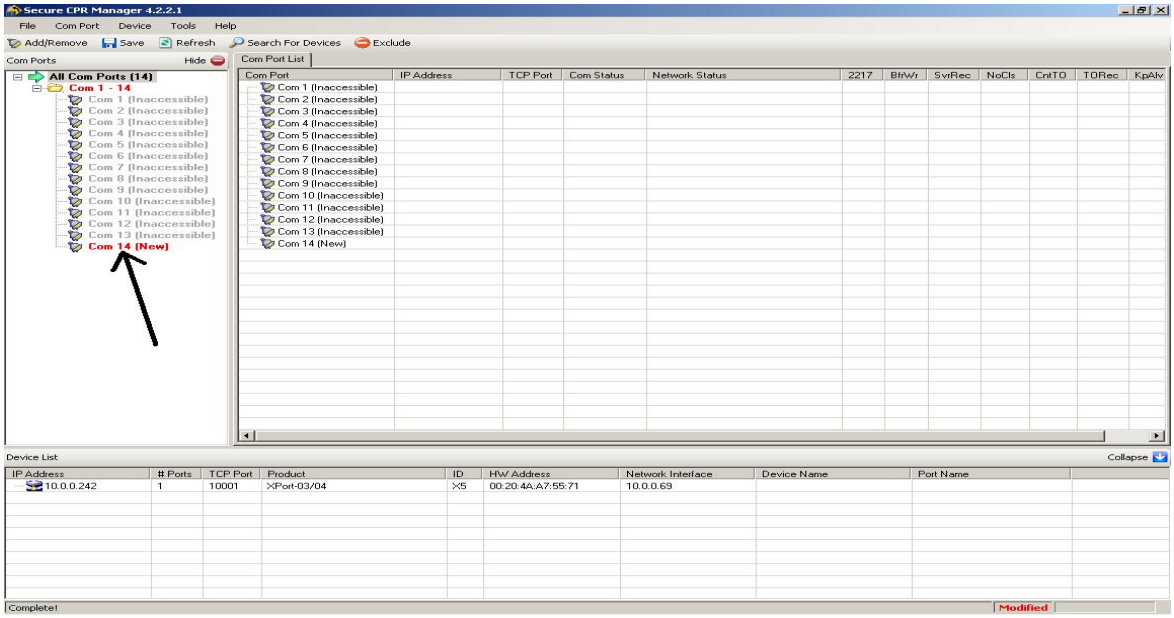
2.CHECKING (IP)

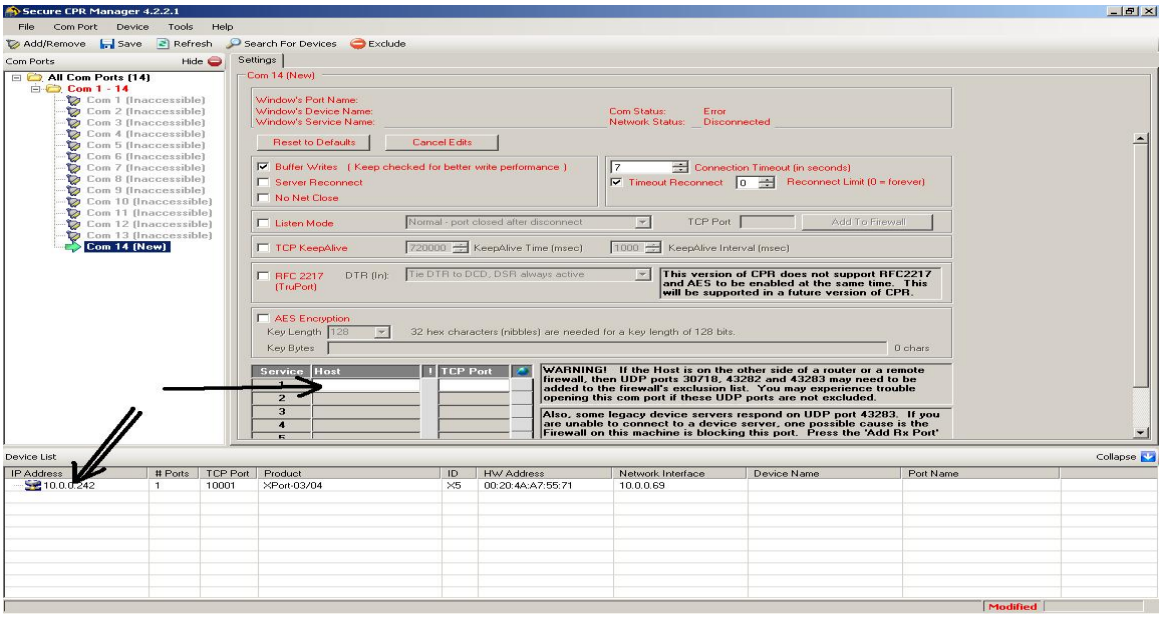


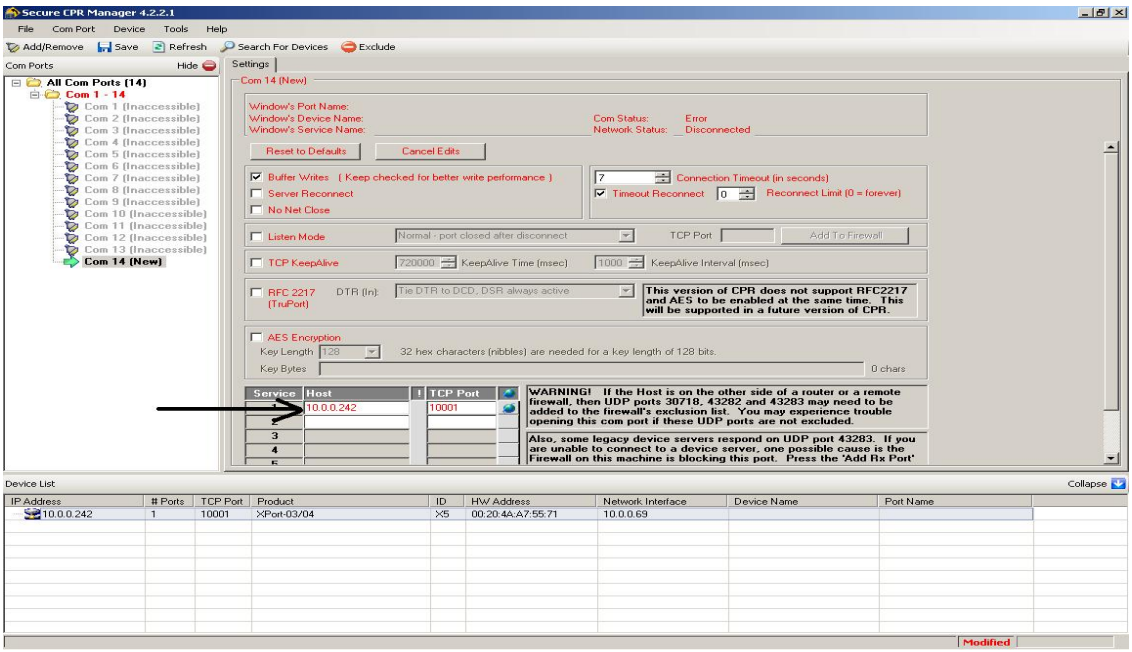


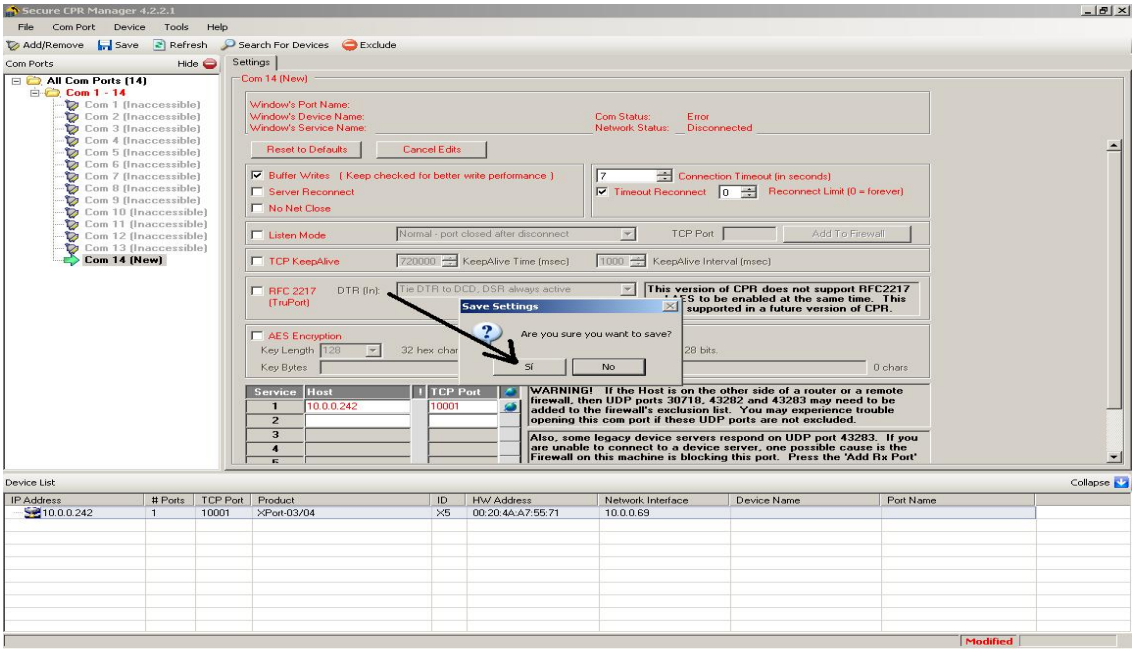
3.Virtual Serial Port (COM)

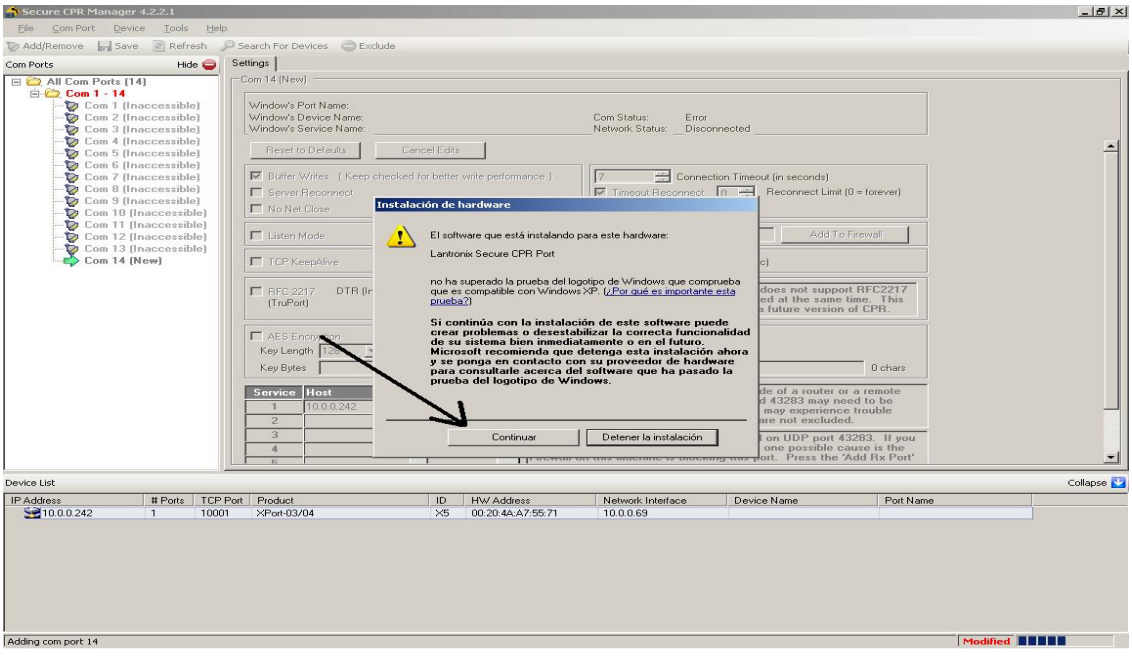





Secure CPR Manager 4.2.2.1
File Com Port Device Tools Help
Add/Remove Save Refresh Search For Devices Exclude
All Com Ports (14)
Com 1 - 14
Com 14 (New)
Settings
Com 14 (New)
Reset to Defaults
Cancel Edits
Buffer Writes (Keep checked for better write performance)
Server Reconnect
No Net Close
Connection Timeout (in seconds)
Timeout Reconnect
Reconnect Limit (0 = forever)
Listen Mode
TCP Port
Add To Firewall
TCP KeepAlive
KeepAlive Time (msec)
KeepAlive Interval (msec)
RFC 2217 (TruPort)
DTR (In):
This version of CPR does not support RFC2217 and AES to be enabled at the same time. This will be supported in a future version of CPR.
AES Encryption
Key Length
32 hex characters (nibbles) are needed for a key length of 128 bits.
Key Bytes
Service Host TCP Port
WARNING! If the Host is on the other side of a router or a remote firewall, then UDP ports 30718, 43282 and 43283 may need to be added to the firewall's exclusion list. You may experience trouble opening this com port if these UDP ports are not excluded.
Also, some legacy device servers respond on UDP port 43283. If you are unable to connect to a device server, one possible cause is the Firewall on this machine is blocking this port. Press the 'Add Rx Port'
Device List
10.0.0.242 1 10001 XPort-03/04 X5 00:20:4A:A7:55:71 10.0.0.69
Modified


Secure CPR Manager 4.2.2.1
File Com Port Device Tools Help
Add/Remove Save Refresh Search For Devices Exclude
Com Ports Hide
All Com Ports (14)
Com 1 - 14
Com 1 (Inaccessible)
Com 2 (Inaccessible)
Com 3 (Inaccessible)
Com 4 (Inaccessible)
Com 5 (Inaccessible)
Com 6 (Inaccessible)
Com 7 (Inaccessible)
Com 8 (Inaccessible)
Com 9 (Inaccessible)
Com 10 (Inaccessible)
Com 11 (Inaccessible)
Com 12 (Inaccessible)
Com 13 (Inaccessible)
Com 14 (New)
Settings
Com 14 (New)
Window's Port Name:
Window's Device Name:
Window's Service Name:
Com Status: Error
Network Status: Disconnected
Reset to Defaults
Cancel Edits
Buffer Writes (Keep checked for better write performance)
Server Reconnect
No Net Close
Connection Timeout (in seconds)
Timeout Reconnect
Reconnect Limit (0 = forever)
Listen Mode
Normal - port closed after disconnect
TCP Port
Add To Firewall
TCP KeepAlive
KeepAlive Time (msec)
KeepAlive Interval (msec)
RFC 2217 (TruPort)
DTR (In):
Tie DTR to DCD, DSR always active
This version of CPR does not support RFC2217 and AES to be enabled at the same time. This will be supported in a future version of CPR.
AES Encryption
Key Length
32 hex characters (nibbles) are needed for a key length of 128 bits.
Key Bytes
0 chars
Service
Host
TCP Port
10.0.0.242
10001
WARNING! If the Host is on the other side of a router or a remote firewall, then UDP ports 30718, 43282 and 43283 may need to be added to the firewall's exclusion list. You may experience trouble opening this com port if these UDP ports are not excluded.
Also, some legacy device servers respond on UDP port 43283. If you are unable to connect to a device server, one possible cause is the Firewall on this machine is blocking this port. Press the 'Add Rx Port'
Device List
Collapse
IP Address
Ports
TCP Port
Product
ID
HW Address
Network Interface
Device Name
Port Name
10.0.0.242
1
10001
XPort-03/04
X5
00:20:4A:A7:55:71
10.0.0.69
Modified


Secure CPR Manager 4.2.2.1
Save Settings
Are you sure you want to save?
Sí
No
Modified


Secure CPR Manager 4.2.2.1
Instalación de hardware
El software que está instalando para este hardware:
Lantronix Secure CPR Port
no ha superado la prueba del logotipo de Windows que comprueba que es compatible con Windows XP. (¿Por qué es importante esta prueba?)
Si continúa con la instalación de este software puede crear problemas o desestabilizar la correcta funcionalidad de su sistema bien inmediatamente o en el futuro. Microsoft recomienda que detenga esta instalación ahora y se ponga en contacto con su proveedor de hardware para consultarle acerca del software que ha pasado la prueba del logotipo de Windows.
Continuar
Detener la instalación
Adding com port 14
Modified

DIGITAL INDICATOR (SC1)

Advanced weight detection system by way of top range built-in digital load cells (up to 16).

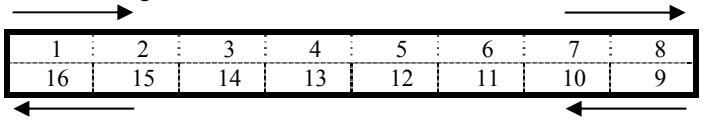
Features

- **CONSISTENCY:** Entirely freestanding digital precision system.
- **SIMPLICITY:** Plug and Weigh digital system: Connect and weigh directly without having to gauge and configure the system.
  - Factory default digital cells
- **RELIABILITY:** Viewer with personalised errors and events indication system for each digital cell, in order to facilitate and delimit the error sources throughout the system.
- **SAVINGS:** Ability to generate all types of weighing equipment using a single digital cell type.
  - Need for one single cable, encapsulating power supply and data.
  - Significant savings in equipment and cables, from not needing a junction box.
  - Significant reduction of cabling given the serial connection between digital cells.
- **SPEED:** Display of all the digital cells connected separately and in turn.
- **FLEXIBILITY:** Unequivocal identification and distinction of the equipment of each of the digital cells.
  - Personalised, dedicated control of each of the digital cells.
- **EFFICIENCY:** Real time control of the internal divisions of each of the digital cells.
  - Quick and efficient error control to know which digital cell or which connection has failed.
- **EXACTNESS:** Adjustment of individual angles of each digital cell, also providing greater reliability since there is no interference in the others, as happened in the analogue system.
- **PRECISION:** Obtaining of greater resolution through the multiplication of the real divisions by the number of digital cells.
- **SAFETY:** Substantial increase in the safety and integrity of the cell system by a same specific required precision (cells of 35t for weighing equipment of 60t with 6 cells: safety factor greater than 3, in addition to obtaining as many points as the sum of the same which each of the digital cells can offer).
- **CONVENIENCE:** Transparency from the cell's digital sensor system, up to the gauge level, for quick, efficient and straightforward maintenance.

PROGRAMMING MENU FOR DIGITAL INDICATOR

To enter, keep **FUN+T** pressed during the initial scrolling until RANGE appears.
To exit, press **FUN** on the first menu level.

	Option	*Description*	*Actions*
➢ **RANGE**	-	Choice of the range parameters	**ENT** to enter a submenu. **FUN** to cancel and leave. **ENT** to save.
➢ **METRO.R**	-	Metrological ranges	**T/B** to change option. **ENT** to save. Before showing each full scale, the number of divisions corresponding to each of them will be indicated with M symbol (6000 when set, 3000 otherwise). *NOTE: When entering the option, the metrological scales will be shown in increasing order, always from the first option.*
➢	**60,000**	20 kg.	-
➢	**60,000**	10 kg.	-
➢	**150,000**	50 kg.	-
➢	**…**	…	…
➢ **-SPAN-**	**(value)**	Range span	6 decimal digits). *NOTE: Determines zero monitoring.*
➢ **-FRAC-**	**(value)**	Step resolution (weight fraction)	(0..255 fractions).
➢ **DECIM.**	**(value)**	Number of decimals	(0..3 decimals).
➢ **N.CELS.**	**(value)**	Number of digital load cells	(1..16 digital load cells).
➢ **CEL.CAP.**	**(value)**	Capacity of each digital load cell	(1..255 tons per cell). The equipment will automatically be calibrated every time this value is modified.
➢ **-ZERO-**	-	Indicator calibration zero	**ENT** to save the zero in the equipment.
➢ **ADJUST**	-	Adjusts the indicator gain	**ENT** to enter a submenu. Within the submenu: **T/B** to increase/decrease **slowly.** **T/B** kept pressed during scroll to increase/decrease **quickly.** **FUN** to cancel and leave. **ENT** to save. *NOTE: Modifies the gain (GA.CONV), and consequently the fraction points (PFr) of FIL.DEP. and the maximum zero absorption of ZEROAB.*
➢ **NORMAL**	**(weight)**	Normal adjustment (as many divisions as the divisions on the scale)	-
➢ **FINE**	**(weight)**	Fine adjustment (as many divisions as 10 times the divisions on the scale)	-
➢ **MANUAL**	**(value)**	Manual adjustment	-.
➢ **ANGLE**	-	Angles (individual gains)	Fine individual adjustment of the gains in each digital cell, depending on the total weight on the platform, in the same way as a system is adjusted with potentiometers.
➢ **CEL.- 1**	**(weight)**	Cell 1	-
➢ **CEL.- 2**	**(weight)**	Cell 2	-
➢ **…**		…	…
➢ **CEL.- N**	**(weight)**	Cell N	-
➢ **DELETE**	**Yes/No**	Delete angles	All angles will be configured again at the unit gain (in hexadecimal: 4000h).

➢	**-CELS-**	**-**	Points and test of each cell	-
➢		**CEL.- 1**	Cell 1	-
➢		**CEL.- 2**	Cell 2	-
➢		**…**	…	…
➢		**CEL.- N**	Cell N	-
➢		**-TEST-**	Test mode	The weight will be shown in fine adjustment and in the event of a possible reading error, the numbers of the cell that have failed will be sent via RS232 (if the clock is deactivated). Then if a printer is connected, the previous list will be printed. In the case of an active clock: -ENT: Prints a detailed report of errors so far -Long ENT: Deletes the error log
➢		**-T.BUS-**	Test and verification of parasitic capacities of the bus	The system automatically looks for optimum **robustness** for the current installation. If no correct communication is detected throughout all values, **ERROR** will appear followed by a beep. Otherwise, **OK** will appear followed by 3 beeps. If lower robustness than that recorded is found it will not be modified. Otherwise, it will be updated automatically. The process may take a few minutes, depending on the number of cells and the quality of the installation. Press any key to exit during the process.
➢		**C.CEL.**	Change of digital load cell address	(1..16 digital load cell addresses). There should only be one digital cell connected to the bus. On entry, the number of the current digital cell will be shown. In the event of not detecting any cell, it will display NO.CEL. In the event of more than one being connected, it will not enter.
➢	**OTHERP**	**-**	Parameters of the equipment viewer	-
➢	**STAB.T.**	**(value)**	Stability time	(0..255 fractions of second, approx. 0.5s). **ENT** to save. Recommended in accordance with the type of cell: -Analogue: 1..12 -Digital: 12..32 *NOTE: The greater this is, the greater the precision in the weighing, although at reduced speed.*
➢	**UNSTA.T.**	**(value)**	Unstability time	(0..255 fractions of second, approx. 0.5s). **ENT** to save. Recommended to be the same as STAB.T.
➢	**STA.WIN.**	**(value)**	Stability window	(0..255 fractions). **ENT** to save. If 0, 1/3 fraction will be applied.
➢	**FILTER**	**(value)**	Anti-oscillation filter	(0..255 samples per average within stability window). **ENT** to save. Recommended: 1..12
➢	**FIL.DEP.**	**(value)**	Internal converter filter	(0..255 internal points). **ENT** to save. When entering, a message which indicates the weighing Fraction Points is displayed. Example: P.Fr.=20 and we wish for action in 3 factions, then: VEN.FIL=20*3=60 *NOTE: The greater this is, the greater the precision in the weighing, although at reduced speed.*
➢	**SYMMET.**	**Yes/No**	Symmetry in digital installation	In the event of error, the display will show that the digital load cell has a fault and will proceed as follows: -NO: The last reading of it before the fault will be taken. -YES: The reference of the reading of the symmetrical cell will be taken. The numbering of the cells of the installation is considered as follows:  With extrapolation possible to any number of digital cells as long as it is an even number.

➢	**ROBUST.**	**(value)**	Robustness in bus speed.	(1..255 proportions in time). Recommended is higher than or equal to 16. The higher the value, the more robustness when faced with communications errors but the slower the weighing system.
➢	**ERR.WIN.**	**(value)**	Window showing communications error.	(6 decimal places of weight in kg). All of the weight variations that come out of this window will be omitted. The factory setting is recommended.
➢	**…**	**…**	…	…
➢	**CALIBR**	-	Parametric calibration values	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus.
➢	**GA.CON**	**(value)**	Converter gain	(6 hexadecimal digits). **ENT** to save. Useful to not have to re-calibrate the indicator when is changed. *NOTE: See keys section enter characters A to F.*
➢	**CEL.- 1**	-	Manual angles/zeros 1	**FUN** to leave. **ENT** to save. Individual parameter adjustment of each digital cell of the parameters: -Gains (angles) -Zeros ANGLE will appear. For a few seconds followed by a beep: (0000..FFFFh individual gain points in hexadecimals) *NOTE: Unit gain: 4000h* -ZERO– will appear. For a few seconds followed by a beep: (0000..FFFFh individual zero points in hexadecimals) *NOTE: Zero by default: 2710h (10000 points)*
➢	**CEL.- 2**		Manual angles/zeros 2	-
➢	**…**		…	…
➢	**CEL.- N**		Manual angles/zeros N	-
➢	**M.RANGE**	-	Multirrange (works as bi-scale)	**ENT** to enter a submenu. **FUN** to leave the submenu. **ENT** to save. *NOTE: Indicates multirange error whenever we try to save incompatible data (see its section at this Manual). In this case, the option is automatically disabled.*
➢	**…**	**…**	…	…
➢	**RS-232**	-	Serial communication parameters	**ENT** to enter a submenu. **FUN** to cancel and leave. **T/B** to navigate via submenus. **ENT** to save.
➢	**…**	**…**	…	…
➢	**OPTION**	-	Additional options	**ENT** to enter a submenu. **FUN** to leave the submenu. **ENT** to save. **T/B** to navigate via submenus.
➢	**…**	**…**	…	-
➢	**CONFIG**	-	Indicator parameters dumping through PC	**ENT** to wait for orders (-WAIT- is displayed) from the SENSODATA configuration software (supplied separately).
➢	**LANGUA**	-	Language	**ENT** to enter a submenu. **FUN** to leave the submenu. **T/B** to navigate via submenus. Inside submenu: **T/B** to change option. **ENT** to save.
➢	**ESPAÑA**	**Yes/No**	Spanish	-
➢	**PORTUG**	**Yes/No**	Portuguese	-
➢	**FRANCE**	**Yes/No**	French	-
➢	**ITALIA**	**Yes/No**	Italian	-
➢	**ENGLAN**	**Yes/No**	English	-
➢	**GERMAN**	**Yes/No**	German	-

Quick start-up of digital system

AUTOMATIC CALIBRATION

1. Select the required scale:
    a. RANGE->E.METRO.
2. Indicate the number of digital cells in the system:
    a. N.CELS [E.g: 6]
3. Indicate the **individual** capacity of each cell in tons:
    a. CAP.CEL. [E.g: 35]

CONNECTION CHECK

1. Check the response at individual points of each digital cell (**NO** error messages should appear):
    a. –CELLS- -> CEL.-1 [E.g:.: 10000]
    b. –CELLS- -> CEL.-2 [E.g:.: 9999]
    c. ...
2. In the event of errors in a cell, a check should be made that:
    a. The connection between cells is correct:
        i. The bus connection is continuous (there are no elements open to the air)
        ii. The connection of the internal cables is correct (continuity and bridges)
    b. The cell numbers are correct (in the last case). The numbering should be from **1 to the number of cells** configured for the system:
        i. Disconnect the bus from the viewer and connect it to **a single** cell to check its number
            1. –CELS->-C.CEL.--> [E.g:.: 3]
        ii. In the event of obtaining an unexpected number, change it as appropriate.

The digital equipment is now ready to operate

Last parameter adjustments

CHANGE OF SCALE

1. Choose the SCALE with which you are going to work:
    a. RANGE->E.METRO [E.g: 60000/20kg]
2. Check that the full values, fractions and number of decimals in the SCALE option are correct:
    a. FULL [E.g: 60000]
    b. –FRAC- [E.g..: 20]
    c. DECIM [E.g: 0]

INDIVIDUAL CALIBRATION: ANGLES

1. To compensate irregularities in the scale, with a known weight on each cell: ADJUSTMENT->ANGLE
    a. CEL.- 1: Place the weight on this cell and increase/decrease the individual adjustment until you obtain the correct weight.
    b. CEL.- 2: ...
    c. ...
2. To reset the angles: ADJUST->ANGLE.->DELETE->YES

PREVENTION, DETECTION AND CORRECTION OF POSSIBLE ERRORS

1. Intrinsic detection of semisynchronous communications errors via ACK/NOACK
2. Detection of communications errors via CRC
3. Detection of individual autoreset of cells
4. Detection of errors via a weight error window VIEWER->ERR.WIN [E.g..: 17,500]
5. Prevention of errors in communications with the robustness parameter: VIEWER->ROBUST. [E.g: 16]
    a. For a small value, the system will gain speed but will lose reliability.
    b. For a high value, the system will gain robustness in communications but will lose speed.
6. Correction of possible errors through the symmetry system described in the Programming Menu:
    a. VIEWER->SYMMET.->Yes: the possible error in any digital cell will be corrected with the detection of its symmetrical homologous cell.

ERROR TRACKING

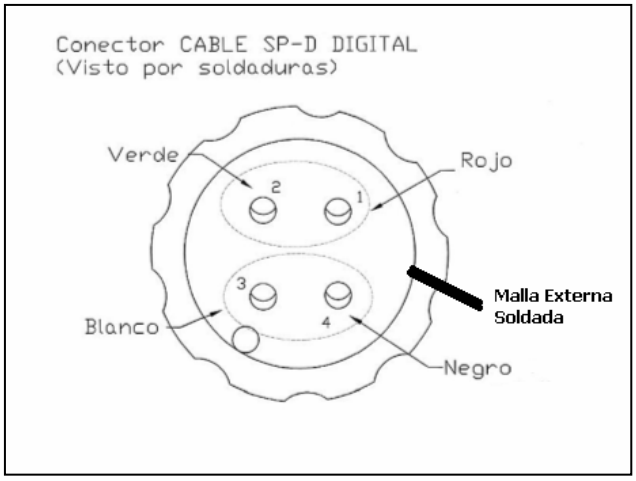
1. Equipment without additional clock and memory:
    a. The number of the cell that gives an error will be sent via series to be printed by a printer or saved on a PC in: -CELLS-->-TEST- . Once outside this menu, the equipment will not have any memory of errors prior to this operation.
2. Equipment with additional clock and memory:
    a. A log error report can be obtained for each cell **so far**, and it can be printed and/or reset in: -CELLS-->-TEST-.
        i. To print it: ENT.
        ii. To print it and set it to zero: ENT for a few seconds.

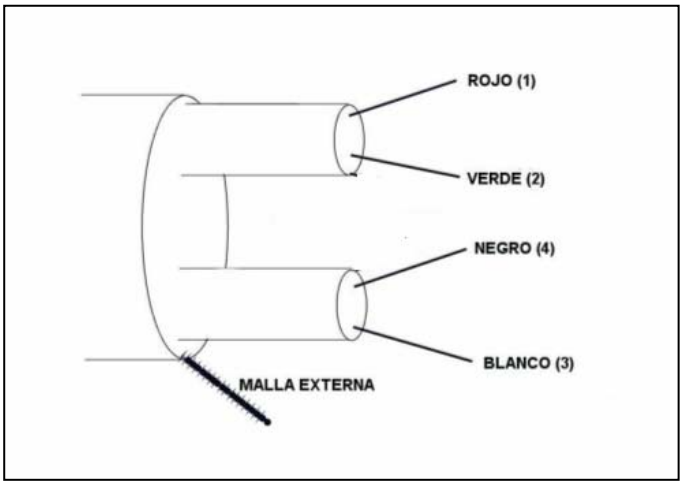
Digital load cell

Soldered throughout. Seal tightness IP-68.
Made from stainless steel.

Approval EC OIML-R60:	4000 divisions
Precision class:	C3-C4
Vmin:	Emax/15000
Power supply tension:	8-15 V DC
Current consumption:	35mA
Transmission speed:	100 kHz (Max)
Conversions per second:	40 s^{-1}
Internal resolution:	24 bits
Compensated temperature margin:	-10ºC / 40ºC
Isolation resistance:	>5000 MΩ

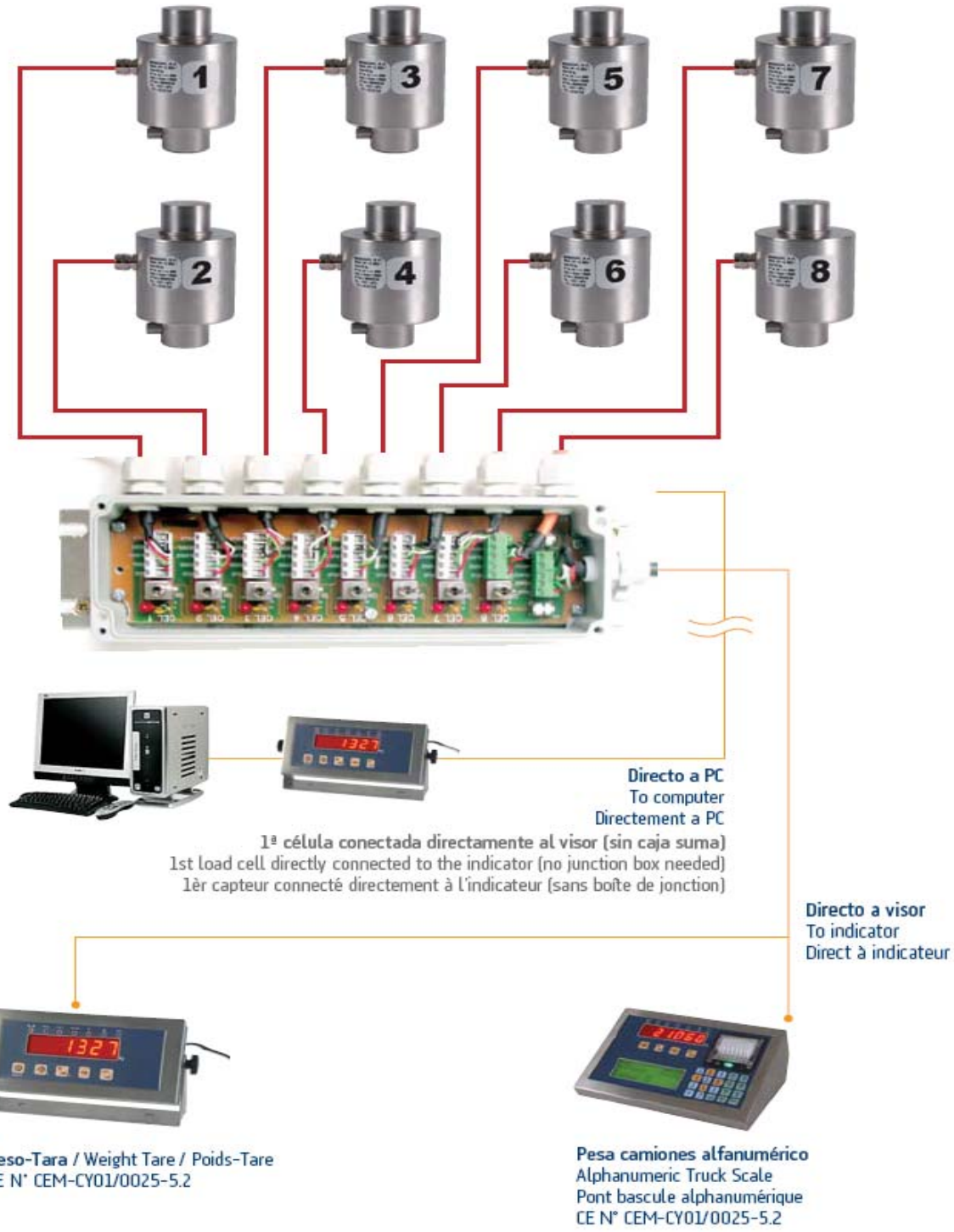
DIGITAL SP CABLE CONNECTION





- Connect the external mesh to the earth (connector key).
- Sections between the viewer and the first cell: (R:0.75,V:0.22)x(N:0.75,B:0.22).
- Sections between cells: (R:0.5,V:0.5)x(N:0.5,B:0.5).
- Weld the threads to the connector always fitting heat-shrinkable to avoid possible cross discharges and insulation losses (always check the insulation between threads).
- Minimum voltage in furthest cell: $V_{14} > 7V$.

Digital junction box



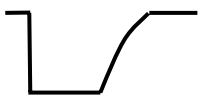
CHECKING/CHANGE DIGITAL LOAD CELL NUMBER (WITH INDICATOR)

1. Open/Disconnect **all** junction box switches
2. Close/Connect **only** desired digital load cell switch
    a. **Verify** load cell number
        i. Go to **CELLS** and check if correct measurement comes from the correct load cells.
        ii. Go to **C.CEL.** and check actual load cell number
    b. **Change** digitale load cell number
        i. Go to **C.CEL.**, check actual load cell number, and replace it by the desired new

IF DIGITAL LOAD CELL ERROR (INDICATOR ON AND SUPPLYING THE SYSTEM)

1. Check load cell cable between indicator and junction box
2. There are one or more LED ON:
    a. Fuse is opened (cell has suffered an overvoltage)
    b. Replace fuse and check load cell
3. Check, if a bad LED, junction box's VCC (red) at all terminals
4. Ensure **NCELS** correct value
5. Open/Disconnect **all** junction box switches
6. Close/Connect **only** load cell #1 switch
    a. Check correct measurement at **CELLS->CELL.-1**
        i. If no response, it should be rejected (or disconnected trough its switch)
    b. Open/Disconnect digital load cell #1
    c. Repeat 6th step for every load cells
7. Close/Connect all correct load cell switches
8. Go to **TEST** and keep it active for a long time in order to verify new configuration:
    a. If **not** Clock/Calendar/Memory hardware part, printer may be directly connected, where wrong load cell number will be printed each time is detected.
    b. Otherwise, log ticket may be printed with **ENT** (and erased by keeping it pressed during LEDs scroll).

Electrical checking

Bus impedance (Indicator must be disconnected)				
SDA(3) WHITE - SCL(2) GREEN			**6K6**	
SDA(3) WHITE -Vcc(1) RED			**3K3**	
SCL(2) VERDE -Vcc(1) RED			**3K3**	
Voltages	V_{CC} (1)	RED	**9V-10V**	
	V_{SCL}(2)	GREEN	**9V-10V**	
	V_{SDA}(3)	WHITE	**9V-10V**	
Waveform				
SCL(2)	GREEN	*R: 5V@10µs*		
SDA(3)	WHITE	*R: 5V@20µs*		
Isolating tester				
$V_{CC(1)}$ + Tierra			**>1000 Mohm**	
$V_{SCL(2)}$ + Tierra			**>1000 Mohm**	
$V_{SDA(3)}$ + Tierra			**>1000 Mohm**	
$V_{GND(4)}$ + Tierra			**>1000 Mohm**	

Farest digital load cell minimum supply voltage: V_{14} > 7V.

State 1: Waiting for vehicle

0kg are at platform. After few minutes of inactivity, backlight will be turned off. Weight will not be displayed inside minimum weighing ("------").

State 2: Weight entrance

As vehicle is entering, correct scroll will be displayed (depending on configuration of Purse Menu). Therefore, ZERO and STABILITY indications will show their state.

State 3: Weighing validation

Depending on weight zone, from 3 defined in Purse Menu, inside vehicle weights in, weight indication should be unblocked, following scroll instructions:

-Button validation: Button should be pressed.

-Coin/s validation: As coins as scroll says should be introduced.

-Chip/s validation: As chips as scroll says should be introduced.

-RFID validation: Bring card (RFID tag) closer to indicated zone. Each customer weighings will be saved, in order to generate logs print outs or PC-dumps.

State 4: Print out and displaying

As tickets as set in Purse Menu will be printed. Weight will remain unblocked until next minimum weight detection.

NOTE: As well as scrolls speed, as blocked weight time, depend proportionally on RS232->SEND parameter

NOTE: Ticket can be printed every time ENT is pressed, with no needing of minimum weighing pass through.

PURSE MENU

To enter: FUN+T during weighing state

Option	*Description*	*Actions*
➢ **COIN**	Type and number of coins/chips per weight region	(0..255 coins/chips per weight region). 0 implies button functionality. (Weight will not be blocked until 0 reaching)
➢ **PRICE**	Value of each coin	(0..2,55 euros with 2 decimals) 0 implies chip functionality.
➢ **TICKET**	Number of tickets to be printed when validating.	(0..255 tickets). 0 implies permanent unblocked weight (for testing).
➢ **LIMI-1**	Sepparating weight limit between regions 1 and 2	(6 weight digits). Region 1: 0 .. LIMI-1 Region 2: LIMI-1 .. LIMI-2 Region 3: LIMI-2 .. FE
➢ **LIMI-2**	Sepparating weight limit between regions 2 and 3	
➢ **CARDS**	RFID cards configuration	-Updated listing print out is made when entering, and whole counters set reset is asked. -WAIT: Waits until RFID card detection: *If it does not exist, automatic sign up will be done *If it already exists, unregistering will be asked -If ENT is pressed, whole data base deleting will be asked.

EXAMPLE1: If vehicle weights 15000 kg, weighing is validated, with:

COIN= 2
PRICE= 0.50 Euros
TICKET= 2
LIMI-1= 10000 kg
LIMI-1= 20000 kg

4 0,50-Euro coins must be introduced, as region 2 is achieved with 2 coins fore ach, and 2 tickets will be printed as follows:

```
======================================
          First Header Line
         Second Header Line
          Third Header Line
======================================
Ticket:                          1366
======================================
Date:  17/06/09          Time:  11:18:59
======================================

WEIGHT:   15000 kg
Price:    2.00 Eur. (Included taxes)

 Gross:.....
  Tare:.....
  Net:.....
PLATE.....
CLIENT.....
PRODUCT.....
DESTIN.....
======================================
           First Foot Line
          Second Foot Line
======================================
```

EXAMPLE2: If vehicle weights 350.0 kg, weighing is validated, with:

COIN= 3
PRICE= 0.00 Euros
TICKET= 1
LIMI-1= 1500.0 kg (FE)
LIMI-1= 1500.0 kg (FE)

3 chips must be introduced always, as we stay in weight region 3 always, with 3 chips per region, and 1 ticket will be printed as follows:

```
======================================
          First Header Line
         Second Header Line
          Third Header Line
======================================
Ticket:                          1367
======================================
Date:  17/06/09          Time:  11:19:13
======================================

WEIGHT:   350.0 kg
Price:    3      Chip(s)

Gross:.....
  Tare:.....
  Net:.....
PLATE.....
CLIENT.....
PRODUCT.....
DESTIN.....
======================================
           First Foot Line
          Second Foot Line
======================================
```

Characteristics:

- Saving, loading, exporting and importing the viewer configuration by way of PC files.
- Quick editing of the viewer values by way of the PC.
- Saving and personalising the *initial scroll* and the head and foot of the *ticket.*

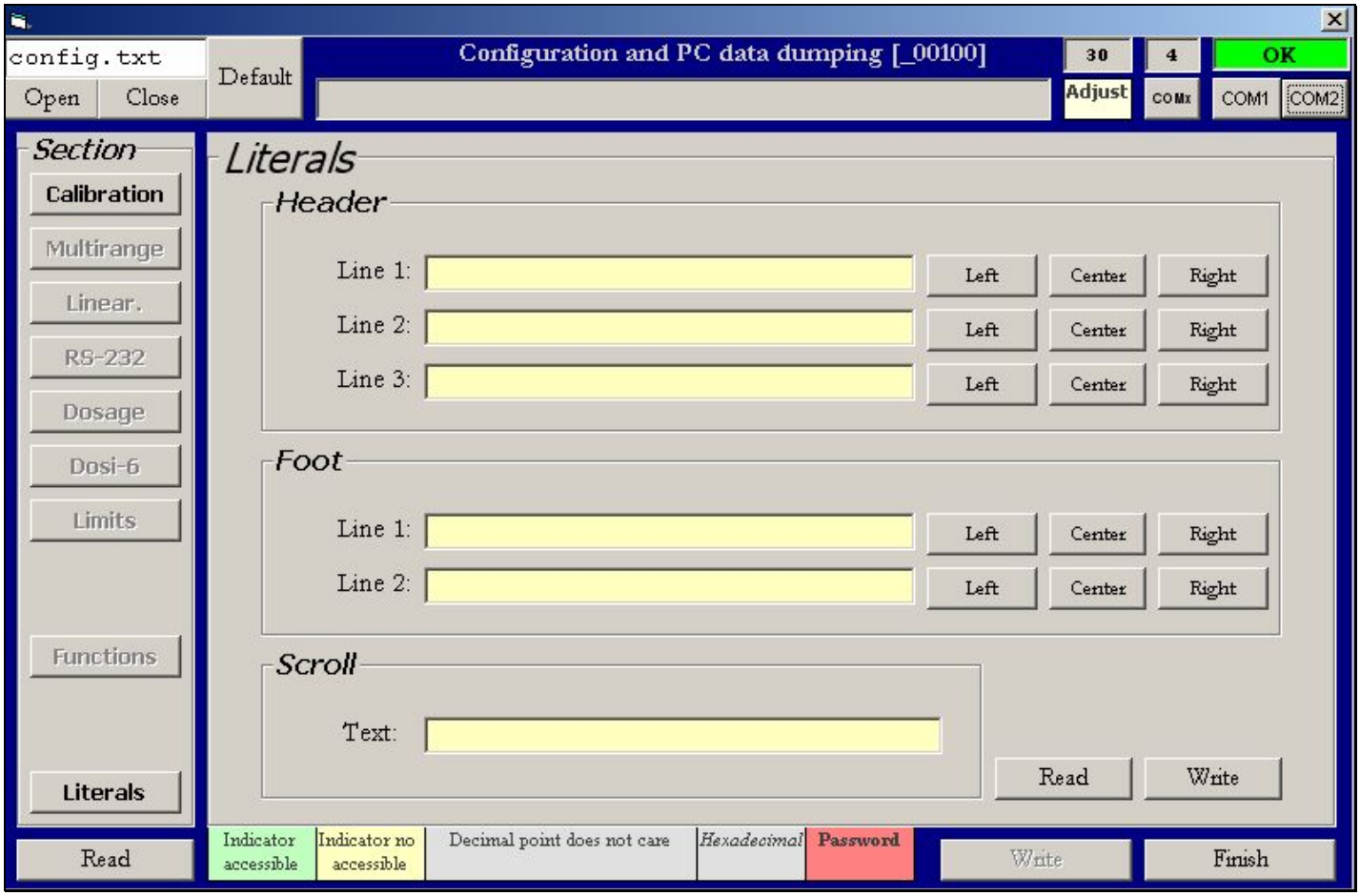


Fig. 1: Main programme screen capture: calibration.

STARTING UP

VISOR

-Enter Programming Menu.

- See CONFIG.

- Press **ENT** to enter "EN ESP." standby mode.

PC APPLICATION

-Open the required communications port from the "COM" buttons section (upper ENT) until the message "OK" is displayed.

-If errors are detected at any moment during the execution of our actions, we can calibrate the communication adjustment time ADJST in order to avoid timer errors. Increase the value for greater reliability (and less speed).

-To close and leave the viewer ready, press FINISH in the lower ENT section). The viewer will give out a series of confirmation sounds.

INDICATOR

-READING (lower FUN): All **the** viewer data will be read and displayed on the screens.

- READING (others): Only the **specific data** for the current section will be displayed on the screen.

- WRITING (lower ENT): All **the** data will be written from the screens to the viewer.

- WRITING (others): Only the specific data for the **current section** will be displayed on the screen.

FILES

-To save the screen data to a file and have a transportable backup copy of the parameters of our viewer, write the name of the required file and press "GUARDAR" (SAVE) in the upper FUN section.

-To open a file and load the data on the screens, enter the filename and press "ABRIR" (OPEN) in the upper FUN section.

-To load the defect values on the screens, press "FÁBRICA" (DEFAULT) in the upper FUN section.

ERRORS

-The upper ENT window will display the programme messages.

-Green background: The programme is ready for operation.

-Yellow background: The programme is processing data.

-Red background: The programme has detected an error.

PC

1. Label format may be made using *Create-A-Label Tools* (see CD SENSOCAR).
2. Label names must be as **Sxxx**, where **xxx** is a number netween 000 al 255. 255 is reserved for total label.
3. Format can be uploaded through the same PC application:

   File -> Transfer label to printer
4. Label format number can be selected at the indicator.

INDICATOR

Programming Menu

- ZEBRA configuration:
  - **RS-232->CONECT.->-PRIN-**
  - **RS-232->PRINTR.->ZEBRA**
- Desired fields should be chosen (8 in total):
  - **RS-232->LABEL->xx (h)**
  - If mask bit is set, its data will be sent.

Digit:	1				0			
SUM:	+8	+4	+2	+1	+8	+4	+2	+1
Range:	0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F				0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F			
Descr.:	**NET/PCS**	**NWEI/UNITW**	**GROSS**	**TARE**	**CODE**	**TIME**	**DATE**	**N.TICKET**
Chars	7	7	7	7	7	8	8	7
Total label (255):	Yes (13 chars.)	Yes	No	No	Yes	Yes	Yes	Yes

TOTAL SUM:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HEX value:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**

EX1:	**9 (h) = +8+1**				**7 (h) = +4+2+1**			
SUM:	+8	~~+4~~	~~+2~~	+1	~~+8~~	+4	+2	+1
Desc:	**NET/PCS**	~~**NWEI/UNITW**~~	~~**GROSS**~~	**TARE**	~~**CODE**~~	**TIME**	**DATE**	**N.TICKET**

EX2:	**8 (h) = +8**				**E (h) = +8+4+2**			
SUM:	+8	~~+4~~	~~+2~~	~~+1~~	+8	+4	+2	~~+1~~
Desc:	**NET/PCS**	~~**NWEI/UNITW**~~	~~**GROSS**~~	~~**TARE**~~	**CODE**	**TIME**	**DATE**	~~**N.TICKET**~~

User Menu

- Desired label format number can be chosen:
  - **N.LABEL-> (0..255)**

ZEBRA: New Label

1. Downlaod drivers:
   http://www.zebra.com/SD/downloads/ZUDv53412.exe
2. Install drivers:
   - ZEBRA EPL ⟶ Zebra TLP2844
   - *Serial port*
   - *Printer Name*
     - Label dimensions
     - Orientation
     - Measurement unit
   - Dispens*:* None
   - Media Type: Thermal Printer.
   - Media Tracking: Continuous.
3. Execute Create-a-Label Tool.
4. Options -> Config... Selec language and measurement unit to mm.
5. Edit -> Config label...:
   1. Width: mm.
   2. High: mm.
   3. Vertical Sepparation: between labels.

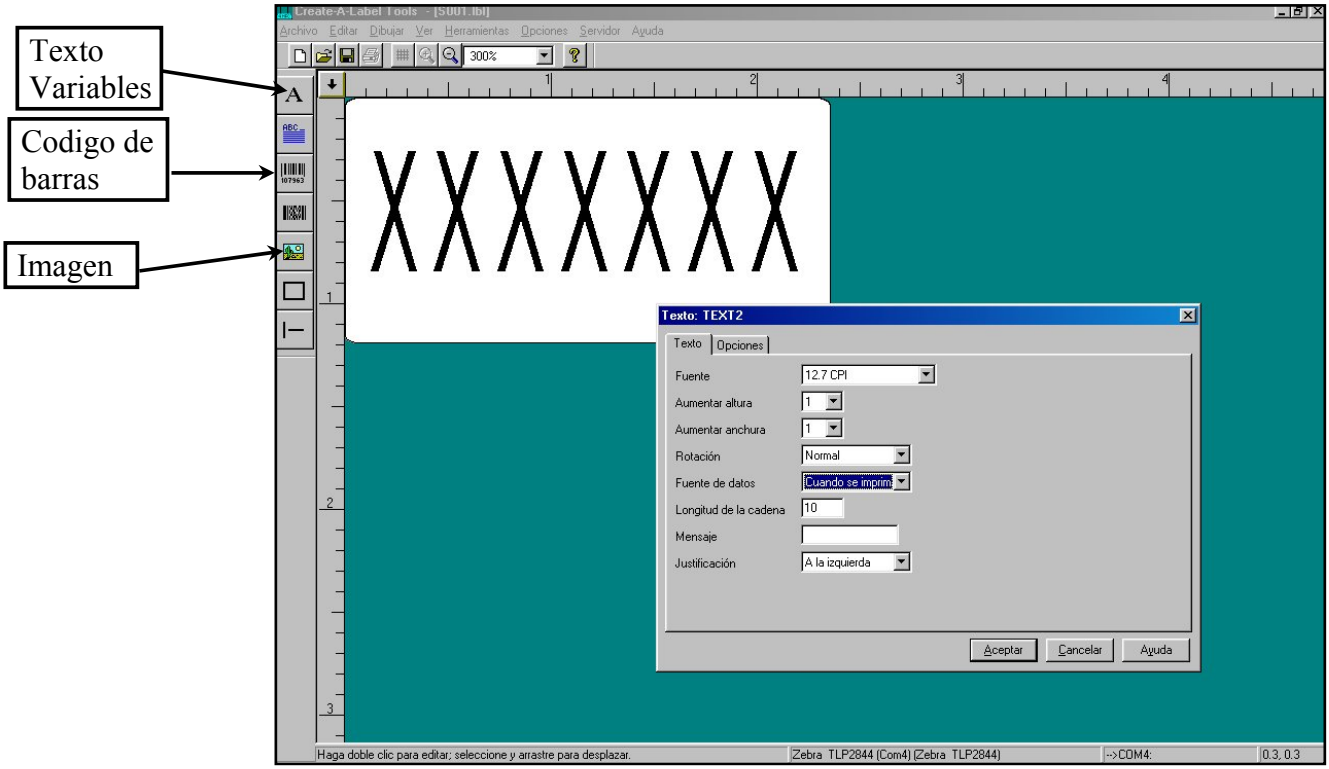
6.Field order must be ensured:

   1. NET/PCS (parciales o totales)
   2. N.WEIGHING / UNITARY WEIGHT
   3. GROSS
   4. TARE
   5. CODE
   6. TIME
   7. DATE
   8. TICKET NUMBER

* Not situated and desired fields have also to have same order.

7. Next options must be changed:

- Data font: When prints.
- Chain length: (See table below).

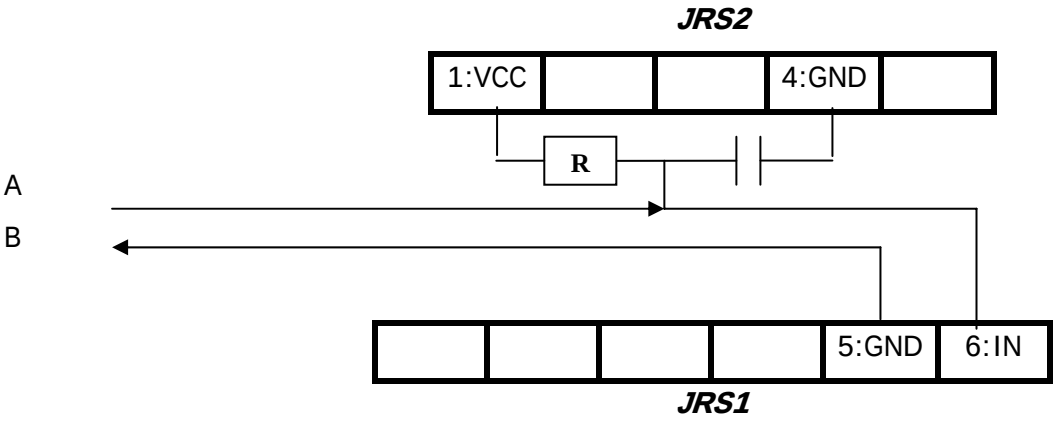


ZEBRA-PC Cable

Check can be done:
UF↵ : Number of formats will be sent by the printer, and their names.
FK"*"↵ : Formats will be erased.
FK*"nombre"*↵ : This format will be erased.

IMPULSE METER EXTERNAL INPUT

SC connector JRS1/2, we have (R=100kΩ; C=100nF):



A and B are the nodes to match from commutating pulse generator.

PROGRAMMATION MENU (See Programming Manual)

When filling, numbers of decimal numbers can be selected:

-RANGE -> N.DECIM. -> x

In order to set the ticket header and foot texts:

-CONFIG-> (WAIT) (And execute the PC *software*)

FUNCTIONS MENU (See User Manual)

When it is desired, the filling option can be configured with FUN+B:

-CODE: Code of the current filling.
-TICKET: Current ticket number. If not 0, it will be autoincremented.
-CLOCK: Date/time configuration.
-NU.ACUM: If not 0, the ticket will autofinalize after x fills.
-FILL: Liters per received pulse **(lit/puls)**. When 0, the SC will work as standard.

FLOW METER CONFIGURATION (KROHNE example)

The SC indicator expects pulses per volume unit, by falling edge detection. The flow meter commutator should not be active, due to the power supply is given by the SC external input circuitry.

-Flow dependant pulses output: 1.06SELECT P -> PULSE/VOL
-Minimum pulse width (to higher resolution): 1.06.PULSWIDTH -> 50ms
-**Same pulse/liter ratio** of the SC indicator: 1.06VALUE P -> **PulS/liter (inverse value of SC)**

CONFIGURATION THROUGH PC: HEAD AND FOOT OF TICKET

SENSODATA software should be used to set the 3 header lines, and the 2 foot lines. Turn the SC indicator in configuration mode (CONFIG)

-Install and run the program.

-Open the apropriate serial port.

-Go to LITERALES section through the button

-Write the desired texts.

-Press ESCRIBIR button.

-Press TERMINAR button when finalizing.

FILLING PROCESS

The SC indicator will display the liter/pulse value configured when initializing and after each action, beeping after a moment.

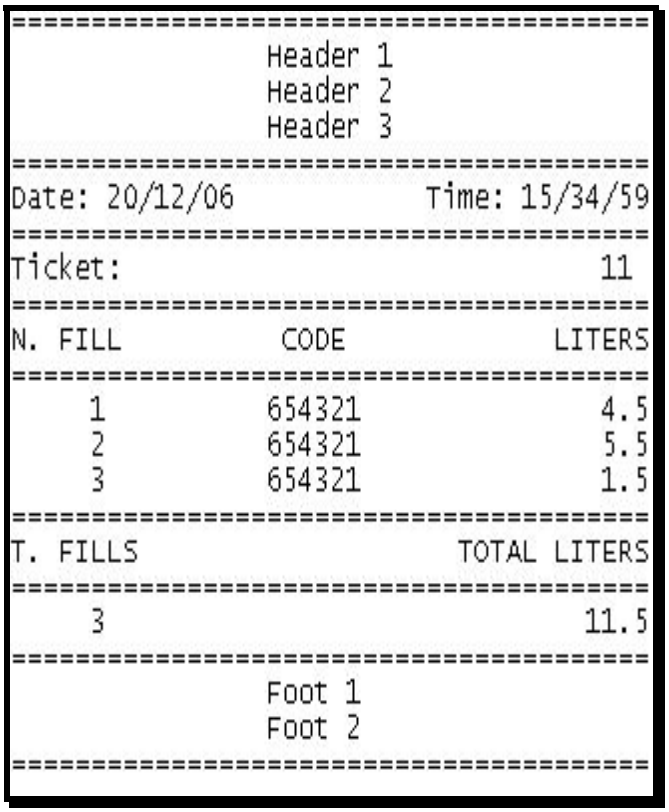
Metrology flag (no metrological) will be set when the SC indicator is ready to count the pulses.

Press **ENT** each time it desires to make a fill. The liter meter will reset to 0.

Pres **F4** if it desires to manually finalize the ticket. The liter meter will also reset to 0.

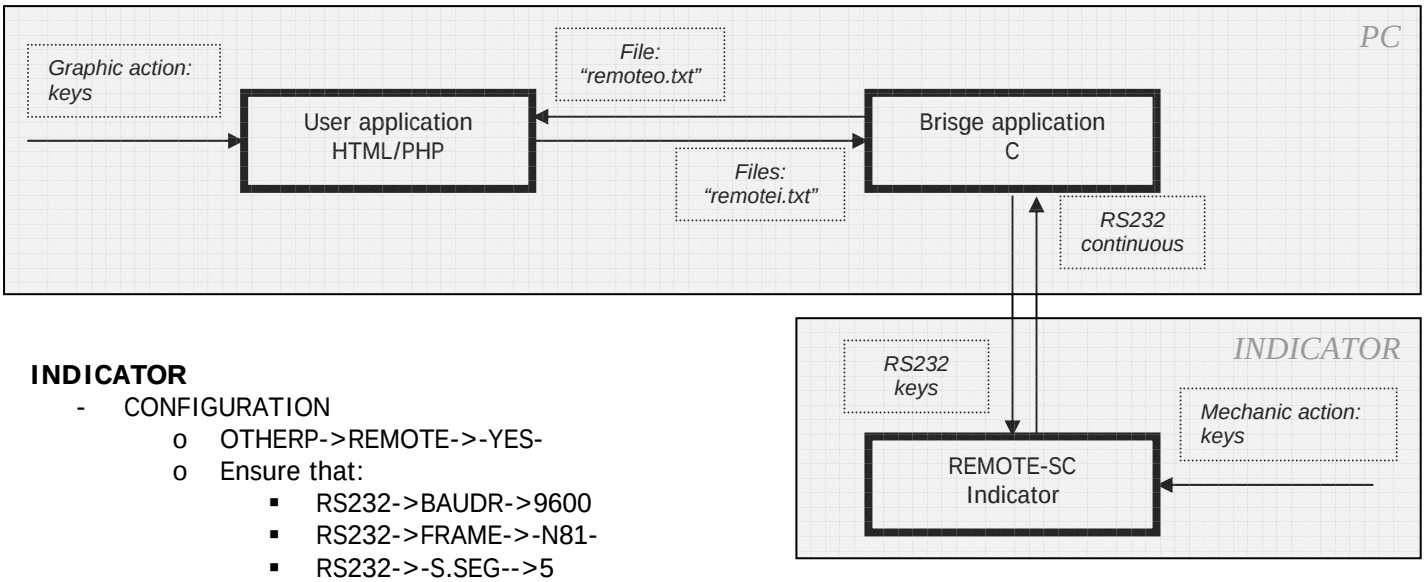
TICKET

If a header and the clock add-on exist, a different of 0 value is set in the ticket number option, and the same code “654321” is configured in each fills, the ticket will be as the following:



Remote acces vía RS232 throguh REMOTE-SC system

GENERAL SCHEME



INDICATOR

- CONFIGURATION
  - OTHERP->REMOTE->-YES-
  - Ensure that:
    - RS232->BAUDR->9600
    - RS232->FRAME->-N81-
    - RS232->-S.SEG-->5
  - RS232 cable between PC and indicator 1st serial port
- FRAMING
  - INPUT [4B]

	1	2	3	4
	S	R	x	CR
	"S"	"R"	30h+#tecla	CR
EX: FUN+B	53h	52h	36h	0Dh

    - Keys' values:
      - TARA 8
      - BRUTO/CERO 4
      - FUN 2
      - ENTER 1

  - OUTPUT [13B]

	1	2	3	4	5	6	7	8	9	10	11	12	13
	N	N	:	SP	X	FLG	D6	D5	D4	D3	D2	D1	CR
	"00"		":"	" "	X	bin	bin	bin	bin	bin	bin	bin	CR
EX: 646 kg with no keys	30h	30h	3Ah	20h	30h	20h	20h	20h	20h	7Dh	66h	7Dh	0Dh

(*): Format flags (bits 7..0): neg X sta zer net T B M

(**) : If 52h ("R") => Indicator is not responding (off).

BRIDGE PC (background)

- CONFIGURATION
  - Executing bridge:
    - REMOTE.EXE [PORT] [BAUDR] [FINLEIN_INDICATOR] [FINLEOUT_INDICATOR]
    - By default: "REMOTE.EXE 1 9600 remotei.txt remoteo.txt"
- DATA FORMAT
  - INPUTS
    - INDICATOR→PC: RS232 (described in INDICATOR-OUTPUT)
    - PC->INDICATOR: Text file "remotei.txt":

	1	2	3
	S	R	x
	"S"	"R"	30h+#tecla
EX: FUN+B	53h	52h	36h

NOTE: Indicator RESET command: x=52h ("R")

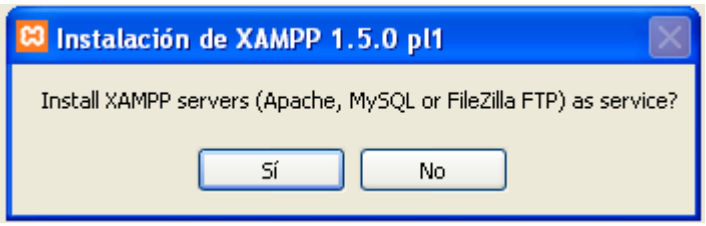
  - OUTPUTS
    - INDICATOR->PC: Text file "remoteo.txt", refreshed at every received frame with format: (See INDICATOR-FRAMING-OUTPUT)
    - PC->INDICATOR: RS232 (described in INDICATOR-INPUT)

WEB PAGE CONFIGURATION:

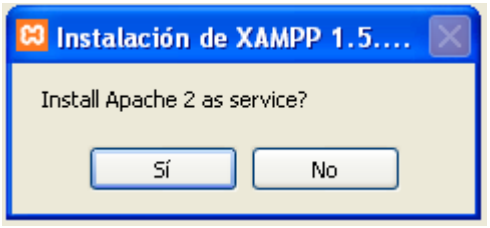
- XAMPP Installation:

Cd_Manuals\PC\RemoteSC -> INSTALAR.BAT.

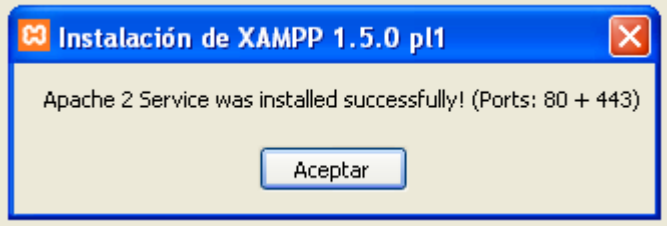
1. Select language.
2. Choose directory
3. Servers installation (YES)



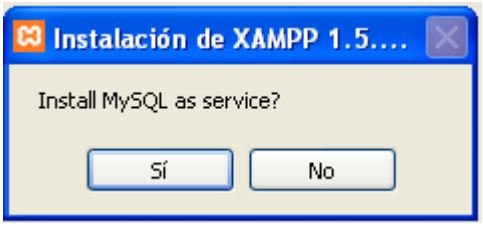
4. Apache (YES).



5. Accept.

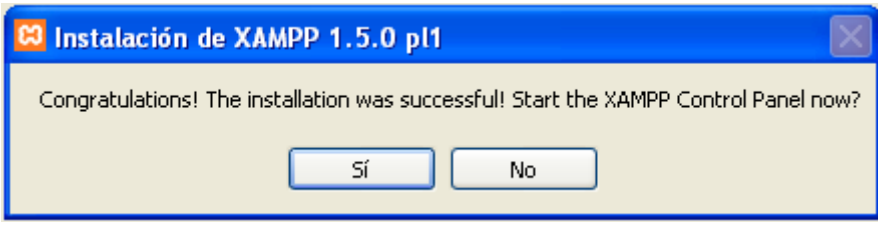


6. MySQL (No)



7. File Zilla (No)

8. Concluded (Yes)



Go to direct acces at the DESKTOP (REMOTE_SC)

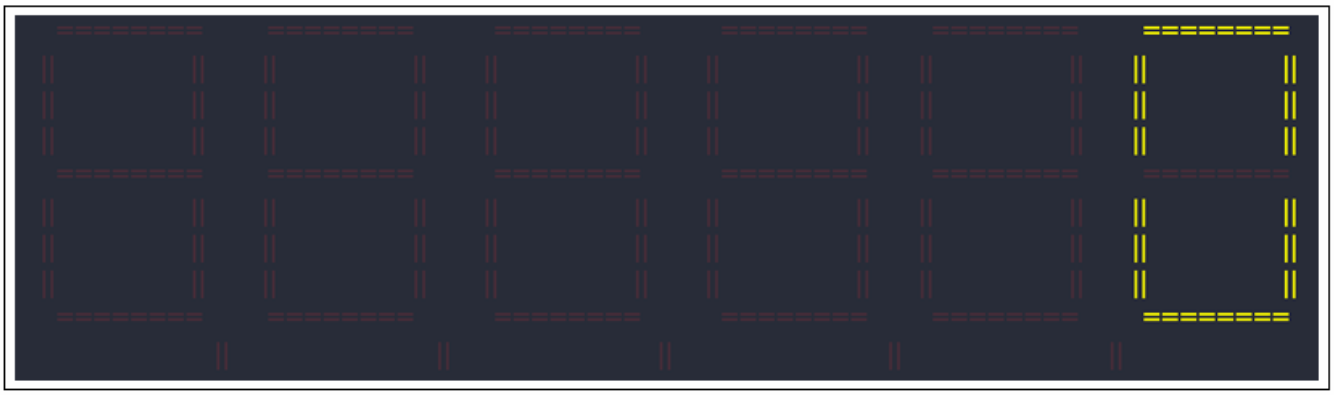
- **WEB:**

SC indicator can be operated as the physical one, but with the advantage and comfort that gives you the distance and accessing difficulty undepending control.

Physical aspect has intended to be as closer to indicator as possible.

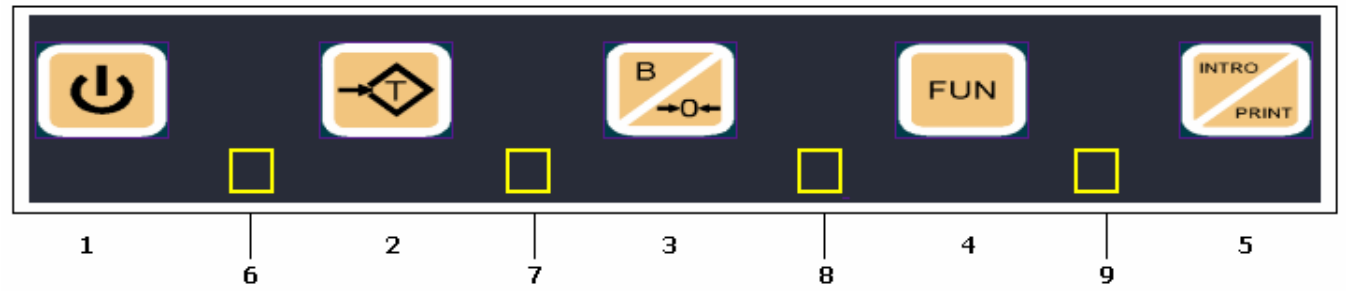
LEDS

Display



Teclado: [1]

1. RESET
2. Standard.
3. Standard.
4. Standard.
5. Standard.
6. ENTER PROGRAMMING MENU.
7. FUN+T
8. FUN+B
9. FUN+ENT



- **RECOMMENDATIONS :**

1. Edit serial port:
"C:\Archivosdeprograma\xampp\htdocs\xampp\remotesc \remotesc.bat",
remote_bridge.exe 7 9600 remotei.txt remoteo.txt → "7" may be replaced.

2. Reccommended resolution → 1024x768 píxeles. Windows bar should be hiden.

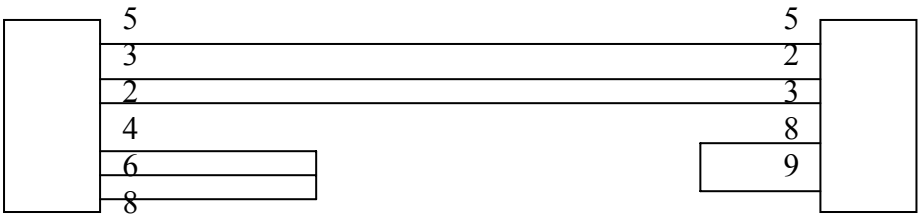
LX-300 printer

Nombre del parámetro	Parámetro por defecto	Parámetro para un SC
Page length for tractor	12 inch	4 inch
Skip over perforation	Off	On
Auto tear Off	Off	On
Auto line feed	Off	Off
Print Direction	Bi-D	Bi-D
Software	ESC/P	ESC/P
0 slash	0	0
High speed draft	On	On
I/F mode	Auto	Auto
Auto I/F wait time	10 seconds	10 seconds
Baud rate	19200 BPS	9600 BPS
Parity	None	None
Data length	8 bit	8 bit
Parallel I/F bidirectional mode	On	On
Packet mode	Auto	Auto
Character table	---- *no importa* ------	---- *no importa* ------
International character set for ... table	---- *no importa* ------	---- *no importa* ------
Manual feed wait time	1.5 seconds	1.5 seconds
Buzzer	On	On
Auto CR (IBM 2380 Plus)	Off	Off
IBM character table	Table 2	Table 2

[1] Keys should not be pressed fastly or consecutively.

Firmware Updating

PROGRAMMING RS232 WIRE



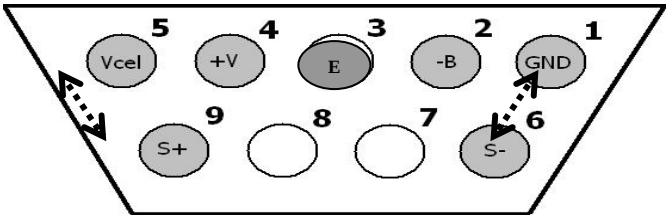
FLASHMAGIC

To update indicator software:

- Make programming RS232 cable:
  - PC side (female DB9): 4-6-8 shorted
  - INDICATOR side (female DB9): 8-9 shorted
  - Pin to pin:
    - 5-5
    - 2-3
    - 3-2
- Conect RS232 programming cable between PC and indicator
- Decompress .HEX application file to known directory
- Install FlashMagic
- Turn on indicator and ensure that no “888888” appear
- Execute "FlashMagic":
  - STEP1: Device: 89C669
  - STEP2: Erase blocks used by HEX file
  - STEP3: Select .HEX file
  - STEP4: NONE
  - STEP5: Start!
- When “Finished”, turn indicator off and on again.

SENSOCAR load cells checking

STEP 1: External cable



DB9 ***female (E: Earth)***

NOTE: 4-wire cable: Dotted line shorts should be made

NOTE for SENSOCAR load cells: Colors are:

RED	WHITE	GREEN	YELLOW	BLUE	BLACK
Vcel V supply	**-B** Signal -	**+V** Signal +	**S+** Sense +	**S-** Sense -	**GND** Common

STEP 2: DB9 connector well subjected

STEP 3: INDICATOR: Check oscillations

1. Enter Programming Menu
2. OTHERP->MV.CELL->(**No significative oscillation should be seen (at 0 and loaded**)

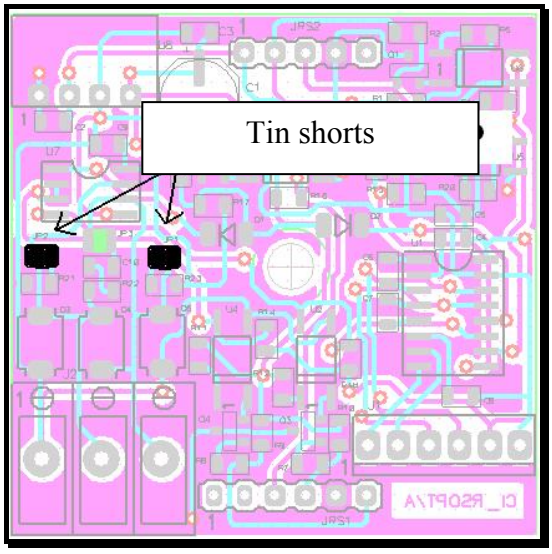
STEP 4: INDICATOR: Correct adjust

1. Enter Programming Menu
2. Calibrate indicator (ZERO and ADJUST)
3. CALIBR->GACON->(**Hexadecimal value between 10000 and 200000 has to be ensured**)

RS-485 Recommendations

1.SIGNAL LEVELS GUARANTEED ALONG BUS

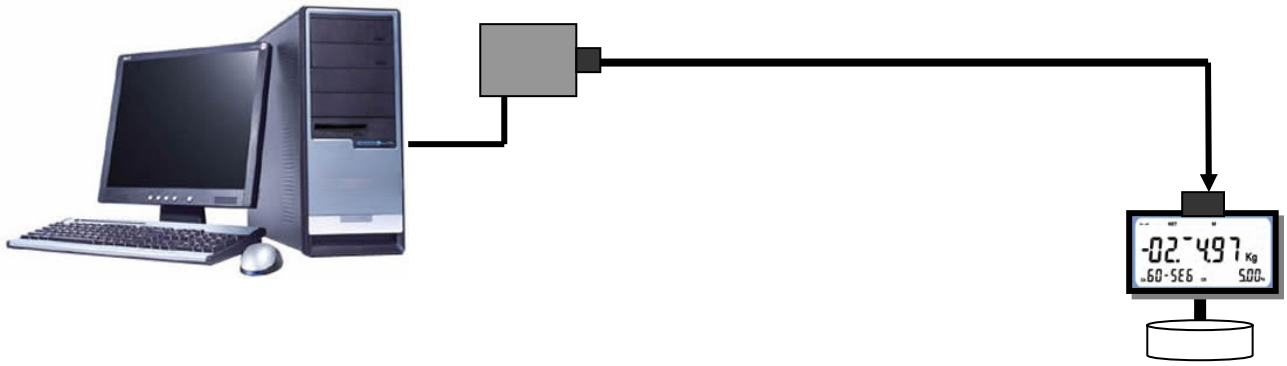
Easy way modifying as follows should be made in each SC RS485 hardware parts:



Line false “0mV” will be avoided following RS485 standard.

2.POINT TO POINT INDICATORS CHECK

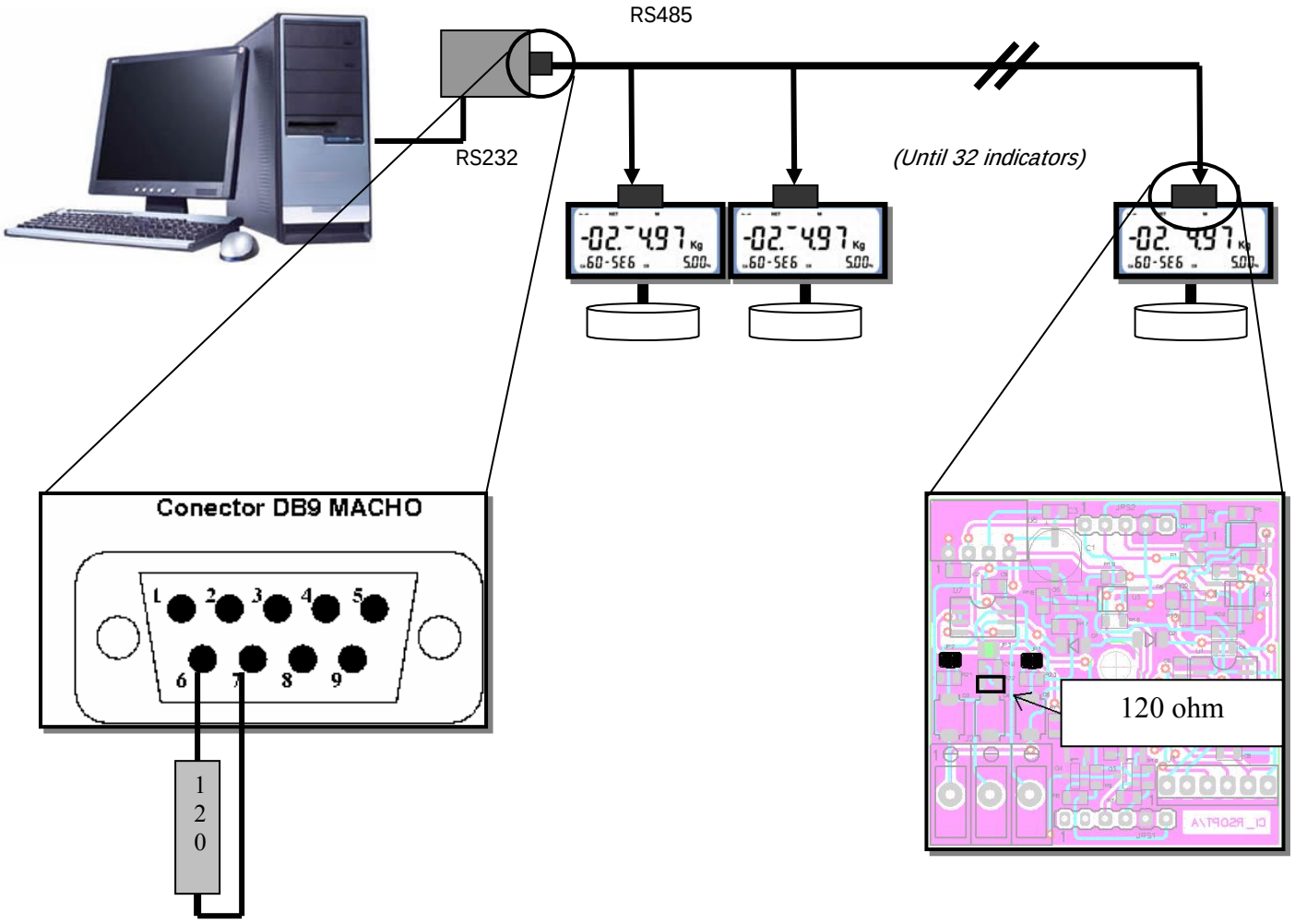
Point to potin mode correct communication of each SC with PC should be checked, in order to individually ensure that every SC indicator is OK to connect to bus.



If any indicator is not responding, problem will be probably found at this concrete equipment, maybe at indicator’s hardware part itself.

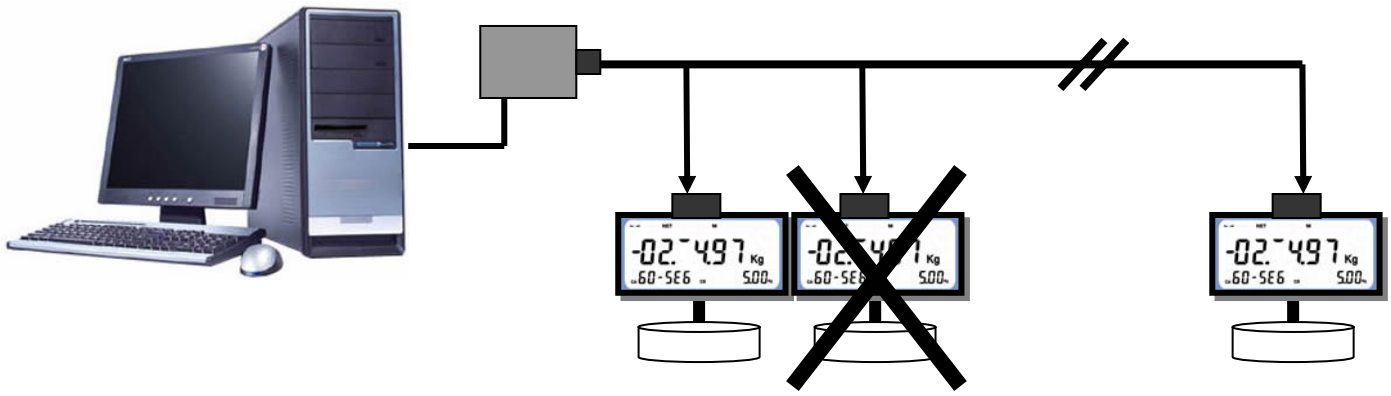
3.MINIMUM REBOUND GUARANTEE

120 ohm ending resistor has to be put at each geografical RS485 bus ending:

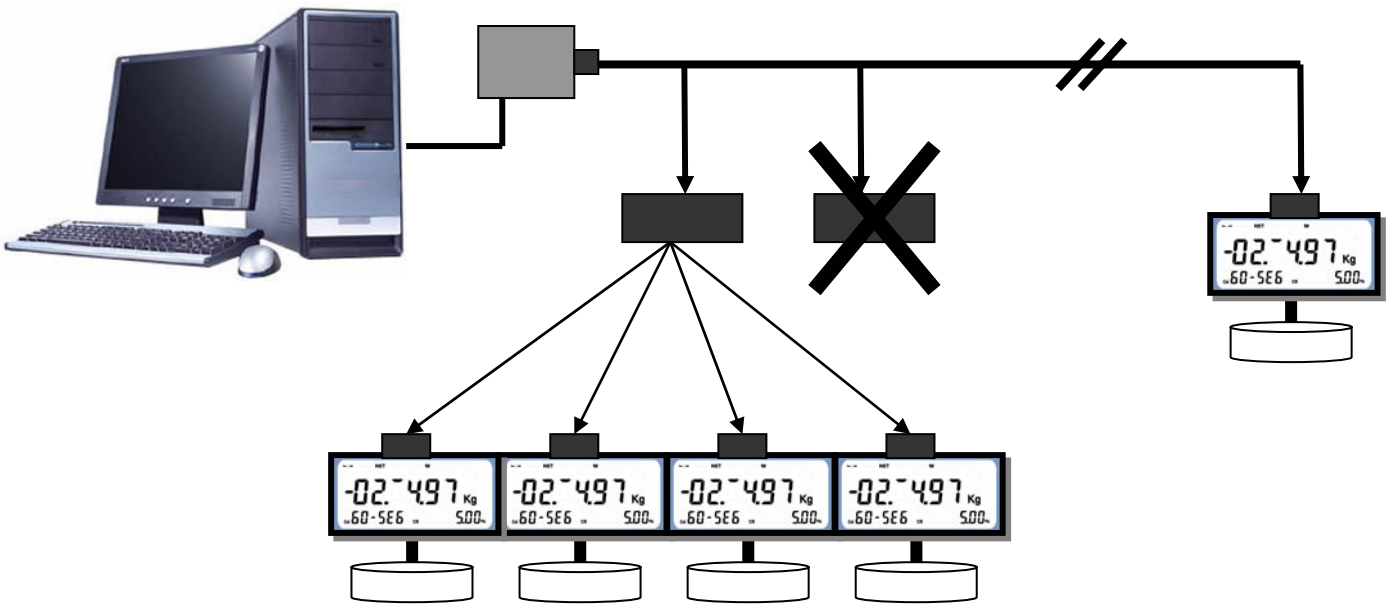


4.BUS INTEGRITY CHECK

All indicators communication has to be checked at the bus). **Last indicator must be connected, 120 ohm ended and verified**:



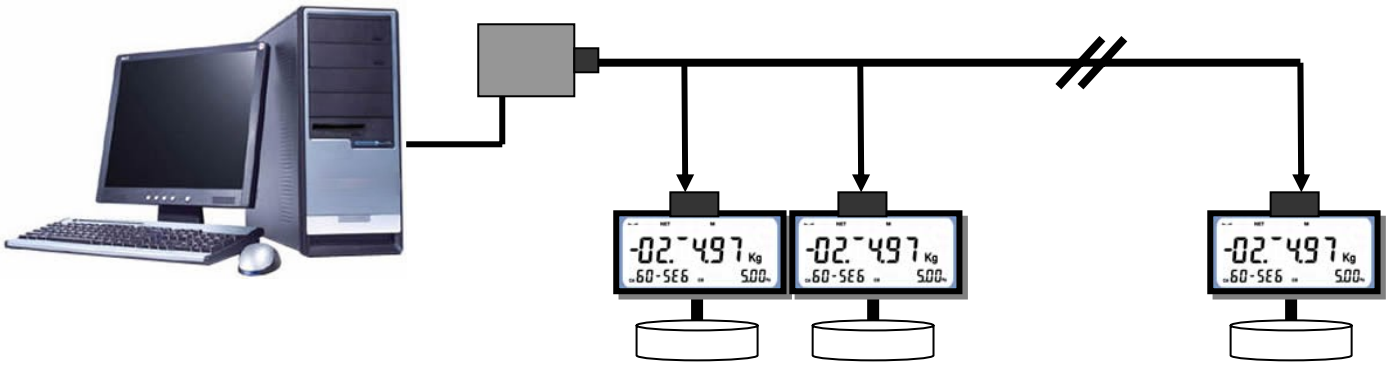
(Example: Indicator 1 checking)



(Example: Bus junction box checking)

5.FINISHING ALL INDICATORS INSTALLATION

All rest of indicators should be connected to bus, and correct communication may be finally checked.



Gravity Parameter and Formula

$$g = g(y,h) = f(latitude, height) = 9{,}80612 - 2{,}5865 \cdot 10^{-2} \cos(2y) + 5{,}8 \cdot 10^{-5} \cos^2(2y) - 3{,}08 \cdot 10^{-6} h$$

THE FOLLOWING IS FOR INFORMATION ONLY:

In Spain, the gravity zones for NAWIs are not regulated.

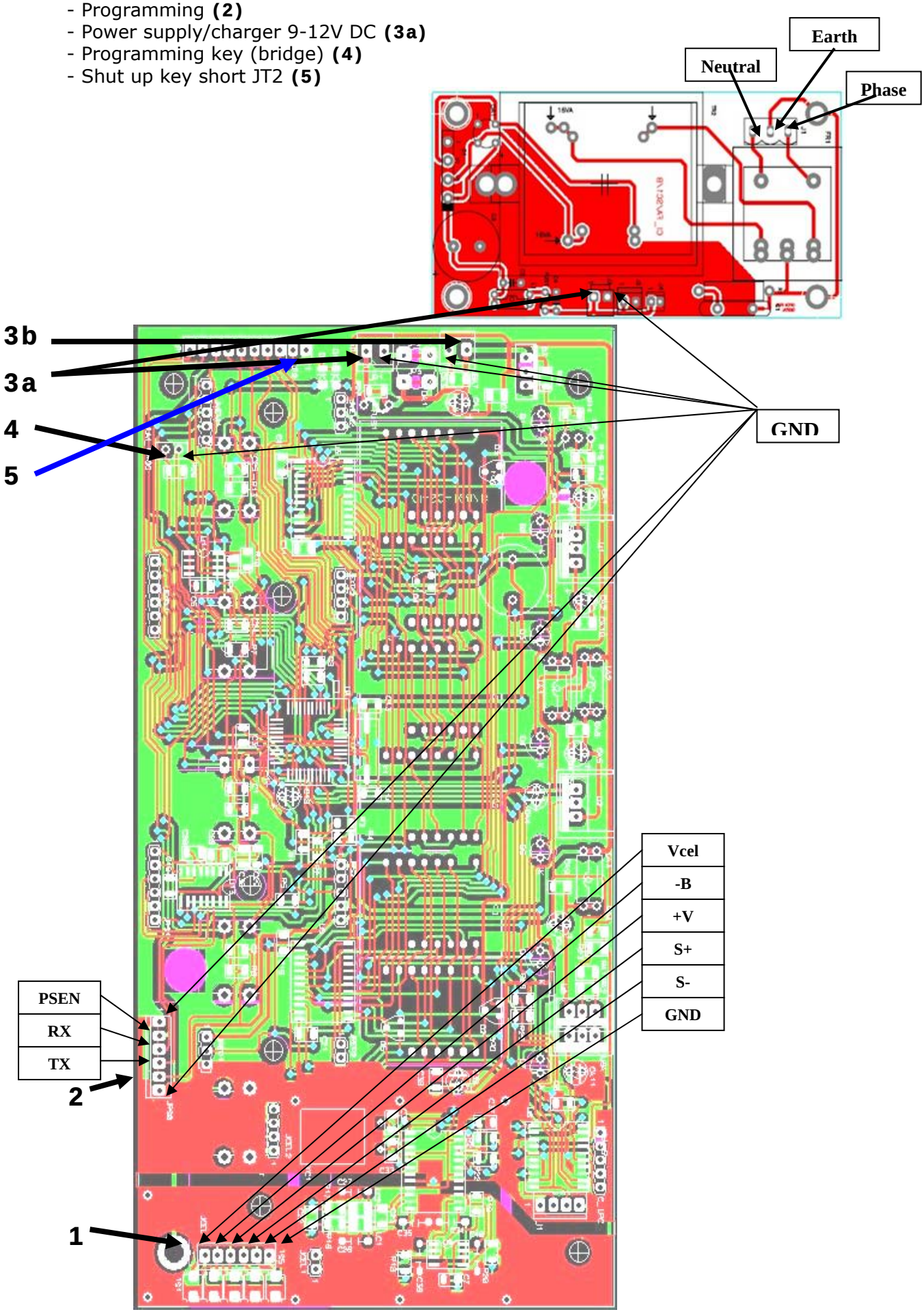
Our manufacturers and our notified bodies use the actual value of the places.

For your information, please find enclosed a list of gravity values in Spain.

City	Longitude	Latitude	Altitude (m)	gravity value (miligales)
ALBACETE	-1º 51' 18,0"	38º 59' 12,0"	680,00	979885,95
ALICANTE	-0º 29' 12,0"	38º 21' 18,0"	35,00	980026,52
ALMERIA	-2º 27' 48,0"	36º 50' 06.0"	10.00	979904,33
AVI LA	-4º 41' 30,0"	40º 39' 12,0"	1140,00	979923,49
BADAJOZ	6º 58' 54,0"	38º 53' 30,0"	190,00	980037,69
BARCELONA	2º 07' 00,0"	41º 23' 12,0"	64,00	980297,82
BURGOS	-3º 42' 30,0"	42º 20' 06,0"	854,00	980140,41
CÁCERES	-6º 22' 60,0"	39º 27' 42.0"	460,00	979999,79
CASTELLÓN	-0º 02' 08,0"	40º 00' 24,1"	20,10	980161,36
CORDOBA	-4º 47' 18,0"	37º 52' 42,0"	105,00	979935,18
CUENCA	-2º 08' 06,0"	40º 04' 00,0"	920.00	979881,55
GERONA	2º 49' 12,0"	41º 58' 60.0"	70,00	980330,89
GRANADA	-3º 36' 18,0"	37º 11' 12,0"	700,00	979653.05
HUELVA	-6º 56' 36,0"	37º 15' 18,0"	12,00	979970,41
HUESCA	-0º 24' 36,0"	42º 08' 06,0"	456,00	980214,51
LEÓN	-5º 34' 18,0"	42º 35' 30,0"	820,00	980159,21
LÉRIDA	0º 37' 60,0"	41º 37' 18,0"	152,10	980250,66
LUGO	-7º 33' 06,0"	43º 01' 00,0"	424,00	980346,55
MADRID	-3º 42' 36,0"	40º 26' 42,0"	690,70	979955,61
MÁLAGA	-4º 23' 36,0"	36º 43' 36,0"	60,30	979900,17
MALLORCA	2º 39' 12,0"	39º 34' 36,0"	22,00	980161,64
MURCIA	-1º 07' 36,0"	37º 59' 18,0"	50,00	979993,87
ORENSE	- 7º 52' 18,0"	42º 21' 00,0"	129,00	980313,05
OVIEDO	-5º 51' 18,0"	43º 21' 30,0"	245,00	980415,78
PAMPLONA	-1º 39' 37,0"	42º 49' 34,0"	415,27	980266,11
PONTEVEDRA	-8º 38' 12,0"	42º 25' 30,0"	20,00	980380,47
SALAMANCA	-5º 40' 12,0"	40º 58' 00,0"	805,00	980046,62
SAN SEBASTIAN	-1º 58' 35,0"	43º 19' 07,0"	6,08	980436,73
SANTANDER	-3º 48' 24,0"	43º 27' 48,0"	5,00	980497.37
SANTIAGO	-8º 33' 12,0"	42º 52' 36,0"	244,60	980401,13
SEVILLA	-5º 59' 18,0"	37º 22' 54,0"	10,00	979937,23
SORIA	-2º 28' 12,0"	41º 45' 36,0"	1044,30	980028,58
TARRAGONA	1º 15' 36,0"	41º 07' 16,0"	67,53	980257,99
TALAVERA (TOLEDO)	-4º 49' 12,0"	39º 57' 42,0"	370,00	980029,98
TERUEL	-1º 06' 30,0"	40º 20' 42,0"	912,00	979905,82
VALENCIA	-0º 21' 36,0"	39º 28' 36,0"	11,00	980113,45
VALLADOLID	-4º 43' 54,0"	41º 38' 54,0"	692,00	980097,32
ZAMORA	-5º 44' 30,0"	41º 31' 00,0"	639,30	980139,58
ZARAGOZA	-0º 54' 00,0"	41º 38' 30,0"	225,00	980223,23
LAS PALMAS	-15º 26' 17,0"	28º 08' 17,0"	3,00	979373,57
TENERIFE	-16º 14' 50,0"	28º 27' 57,0"	4,60	979394,75

Circuit diagram

- Load cell **(1)**
- Programming **(2)**
- Power supply/charger 9-12V DC **(3a)**
- Programming key (bridge) **(4)**
- Shut up key short JT2 **(5)**



Quick instructions

PROGRAMMING MENU: To enter, press **FUN+T** during the initial scroll. To leave, press **FUN** from the first menu level.

Context	*Key*	*Description (standard functions)*
Menu Navigating	**T**	**Next option**.
	B	**Previous option**.
	FUN	**Leave** or previous level.
	ENT	**Enter** submenus.
Entering data of 3 figures or less	**T**	**Increase**. If kept pressed, **rapid increment** will be done when scroll finishes.
	B	**Decrease**. If kept pressed, **rapid decrement** will be done when scroll finishes.
	FUN	Previous level.
	ENT	**Saves**.
Entering data of over 3 figures	**T**	**Increase** digit.
	B	**Change** the digit to modify (indicated by the corresponding decimal point).
	FUN	Previous level.
	ENT	**Saves**.

PROGRAMMING MENU

RANGE		
	METRO.R	M(div): ON-6000 OFF-3000
	-SPAN-	
	-FRAC-	
	DECIM.	
-ZERO-		
ADJUST		
	NORMAL	
	FINE	
	MANUAL	
-AUTO-		
OTHERP		
	STAB.T	
	UNSTA.T.	
	STA.WIN.	
	FILTER	
	FIL.DEP.	
	ZEROIN	
	0-MEMO	
(LED)	LIG.DIS	
	ZEROAB	
	NOCER.F.	
	WEI.MIN.	
	DEFAUL	
	VERSIO	
	SERIAL	
	MV.CELL	
	METROL	
	TARE.AC	
	ZER.NEG.	

	REMOTE	
	PWD	
	DIS.OFF.	
(LCD)	BACKLI	
	AUT.OFF	
CALIBR.		
	CE.CON	
	GA.CON	
MULTIR		
	--ON--	
	METRO.R	
	-SPAN-	
	-FRAC-	
	DECIM.	
LINEAR		
	--ON--	
	POINT	
	POINT.M	
	MANUAL	
	ERASE	
	P.-1	
	...	
	P.- 16	
RS-232		
	BAUDS	
	FRAME	
	NUMBER	
	-LOOP-	
	CONECT	
	PRINTR.	
	LABEL	

	PROTOC	
	-SEND-	
	S-SEC	
	LINES	
	PRI.DEL	
	RS-485	
	MAN.CUT	
OPTION		
(SC1)	-DSD-	
	2ND.SER	
(SC1)	LIMIT	
(SC1)	SEMAPH.	
(SC1)	DOSAGE	
(SC1)	DOSA.TR.	
(SC1)	DOSA-6	
	4-20MA	...
	0-10V.	...
(SC1)	4.20-3R	
(SC1)	RADIO	...
(SC1)	IND.REP.	...
(SC1)	BI.SCAL	...
CONFIG		
LANGUA		
	ESPAÑA	
	PORTUG	
	FRANCE	
	ITALIA	
	ENGLAN	
	GERMAN	